November 1989 Vol. 3 Nº 2 Price £1.80

Archive

The Subscription Magazine for Archimedes Users

Upgrading your A305/A310

First Impressions of Impression

SCSI Hard Drives Compared

More from the PC Show

Bin for RISC-OS / Introduction to C – Part 2

The Acorn MIDI Interface

Reviews: E-Type, Interdictor – Flight Simulator, Timewatch, Pipedream Extended Dictionary.

Better late than never...

Archive is late again, sorry. I understand now why Risc User only have 10 issues per year – these month ends do come round with amazing regularity! Still, I hope it was worth the wait – it is thicker by another four pages! The reason for the extra pages is that we have got quite a few more adverts this month. I'm not saying we will keep to 62 pages – it will depend on whether we continue to get the extra adverts to pay for the extra printing.

The reason for the delay, apart from the fact that I took five days off over half-term, is given below (see "Oh my aching back!"), but may I just say that those of you who are offended by my overt references to my Christian faith ought not to read it.

Proliferation of products

There seems to have been a sudden proliferation of Archimedes based products of late – perhaps a spin-off from the PC Show where a large number of new products were revealed. This can only be good for all those involved with Archimedes, whether buying or selling, as it encourages more people to buy their first Archimedes. Most prospective purchasers of Archimedes are more impressed by the available software base than any amount of flashy graphics.

No exports, please, we're British!

Overseas readers have been looking longingly at our prices for Archimedes computers and comparing them with their own "local" dealers' prices. Even with the extra shipping costs, it would still work out much cheaper to buy from us. The trouble is, I've realised that the small print of my dealer contract with Acorn says I must not do it! Sorry, but I can't break my contract.

Oh, my aching back!

Those who believe in the power of God to heal people, may be interested in the following saga... For two weeks, I had been having increasing back-pain, so one Friday evening, some friends prayed with me that God would heal my back. On Saturday morning... it was worse still! Hmmm?! I went to the physiotherapist on the Monday and as she was working on my back, a disc went and it trapped a nerve – absolute agony it was, all the way down to my big toe!

"2 or 3 weeks flat on your back should clear it up, hopefully!" the doctor said, jovially. The first couple of days gave me valuable time to think, which was good in itself, then my friends came round and prayed with me again. Still no 'miraculous' healing, but over the next day or so I felt a lot better and by Thursday I was on my feet again and on Saturday I worked almost the whole day. I felt better than I had done before I went to the physio. On Sunday, I even did a bit of work in the garden!

"So what!?", you say. Well, I don't know any more than I did before about how, when or why God heals people and I am still going to use the normal medical services when I am ill, but I am convinced that Archive would have been a lot later, were it not for the power of God at work in my life!

Every blessing to you,

Archive

Volume 3 • Nº 2 • November 1989

Contents

Archive magazine is edited by Paul Beverley and published by Norwich Computer Services.

Products Available

• **Acorn C Compiler Release 3** is now available. It includes a RISC-OS library; support for developing desktop applications, relocatable modules and programs using overlays; enhanced development tools; a 500 page manual with many examples (also on disc) and 4 reference cards. The compiler costs £149 ex VAT to first time buyers (£145 inc VAT through Archive), £70 (inc VAT) for Release 1 owners and £50 (inc VAT) for Release 2 owners. This does not include postage and packing which is charged at £5.20. To obtain an upgrade you must return the original disc (NOT the complete package) along with a cheque, postal order or official order made payable to 'Acorn Direct' and send it to Vector Services Ltd.

• **Adventure Creator** – Alpine Software have now released an Archimedes version of their Adventure Language and Programming System ALPS (£32 plus £1 p&p), which allows you to create your own adventures. The program requires at least 1Mbyte and comes with an 800k disk, a 28 page introductory guide and a 42 page reference guide.

• **PRM upgrades** – if you own the old PRM's, you can obtain an upgrade by sending the covers of the old manuals with £50 and £5.20 p&p to Vector Services Ltd.

• **Cambridge International Software** have launched three new products for the Archimedes market: **'Confusion'** (£9.95) a breakout game with a difference, the rules are never the same; **'Pro Copier'** (£9.95) a disc sector copier for professional back-ups of your business applications; **'Super Creations 1/2/3'** (£9.95) consists of two discs containing instrument sounds which can be used for your own programs or games. *(We have tried on a number of occasions to get in touch with CIS to check availability but be so far had no success.)*

• **Concept Keyboards** for the Archimedes – Sherlock Rehab Data of Norway have produced software which allows the use of Concept Keyboards with the Archimedes.

• **DeltaCat Mouse Eliminator** – Voltmace have a joystick for the Archimedes which simply replaces the mouse – £29.95 or £28 through Archive – works a treat with Interdictor flight simulator!

• **Desktop Games** – Anonymouse have produced six desktop games on two discs. The first contains one-armed bandit, Reversi and a Pelmanism game. The second disc contains Pontoon, a memory game and Yahtzee. Each disc costs £10 or you can buy both discs for £15 (prices include VAT and p&p).

• **DIGIT** – the image analysis software DIGIT is no longer available from the Institute of Ophthalmology. However, copies can still be obtained from Dr B.P.Haynes at 31 Priory Gardens, Berkhamstead, Herts, HP4 2DS. Tel: (0442) 872092. The software is now supplied as RISC-OS applications and the prices are as before i.e. DIGIT package for 2d measurement £150, 3DIGIT for 3D reconstruction £50, GRAPHDATA for reading graphs £30. The packages can be used with the Watford video digitiser or Wild Vision chromalock for measuring video pictures or with the Summagraphics Bit Pad 2 digitiser tablet for measuring photographs, graphs and drawings.

• **DiscTree** – Mitre Software launched a second release of their DiscTree software (£49.95 inc VAT). One of the main features of the update is a 'compressed file output' which reduces the number of floppies that are required for backup. The 'TreeViewers' have also been enhanced to include: filer type facilities such as auto update on the creation/deletion of a directory and copying/saving of files; improved display appearance with the ability to create a display on any sub-directory and not just the root; and directory management options (delete and copy). Existing owners should note that they are entitled to an upgrade free of charge.

• **E-Type** – Impact Software / 4th Dimension have released a new driving game based on an E-Type Jaguar. It boasts digitised sounds and graphics for 5 different courses. The courses contain other cars, oil spills, road works, trees, rocks, billboards, policemen, etc. (See review on page 49.)

• **Fun School 2** – Database Direct have produced a new series of educational programs for the Archimedes. There are three packs: the under 6's, 6-

8 year olds and over 8's. Each pack comes with eight programs, a badge and detailed instructions. The computer itself monitors the child's progress. The skill level – initially set by the parents – is automatically adjusted to suit the child's ability.

• **LinCAD** – Linear Graphics have now finished their 2D CAD package for the Archimedes. (£150 + VAT) See the show report for more details.

• **Lingenuity's A300/A400 internal SCSI hard drives** are now in full production. They supply 5 sizes of hard drive: 20M (40 ms Seagate) at £375, 49M (40ms Seagate) at £499, 75M (18ms Rodime) at £799, 105M (18ms Rodime) at £839 and 217M (18ms Rodime) at £1249 (all prices exclude VAT). Lingenuity say that parts of the SCSI software have been licensed directly from Acorn, so there should be no problems with compatibility. (See page 10.)

• **MEMC1a upgrade** – on its own, the MEMC1a chip costs £79.95 inc VAT and can be obtained from your local Acorn Dealer. It is also supplied as a free upgrade with the Floating Point Podule or the Acorn SCSI card. The upgrade is on a one chip per card basis and will only be supplied if your computer doesn't already have a one e.g. if a school wants to share a FPE between say 10 machines then it will have to buy 9 extra MEMC's.

• **Noah Paint 16** – GMA have reworked their 16 colour art package, which now includes a new manual (on disc). Some of the facilities it now provides are: a magnifier, brushes, 3D aids, colour palette manipulations and stats, grid lock, cross fade and links to the Watford digitiser. The price is £10 ex VAT.

• **PlaneDraft** – new prices – following the comments made in Archive 3.1 p42, Vision Six have now revised their prices for this Structural Analysis package: £375 for the frame analysis only (was £475), £200 for truss only (was £250), £250 for grid only (was £325), or £700 for all three (was £875). They have also said that the points mentioned in the review will be implemented as improvements in the near future.

• **Quest** – an established BBC database application now converted to Archimedes. It is readily available from the Advisory Unit for Microtechnology in Education, Hatfield at £30 (site licence).

• **RAM prices down again** – we've had yet another drop in the price of the ram for A400/1 series computers. It has gone down from £210 to its present price of £120. This means we can sell a 420/1 equivalent for £1715 and a 440/1 equivalent for £2240. These prices include £100 of free software. (Compare this with Acorn's own prices of £1954 and £2874 for 420/1 and 440/1.)

(If you want to buy a PC emulator at the same time, add £60; if you want an Acorn monitor, add £230; if you want an Eizo multi-sync monitor, add £525.

• **RFS Filer for RISC-OS** – the Data Store have produced a RISC-OS utilities disc that includes a module which will allow the Computer Concepts ROM/RAM board to be accessed from the desktop just like an ADFS disc. *(If you only want the RFS Filer, we have a module written by CC that does this. If you send us a blank 800k-format disc, we will give you a copy.)*

• **Shareholders' offer** – Acorn have formulated a special offer for shareholders in the Acorn Computer Group plc which consists of a reduced purchase price on the Acorn range of computer systems. Full details will be sent with the half-year results but the reductions are estimated to be between £70 and £420 on the Archimedes range.

• **Watford Graphics Tablet** – Watford's new graphics tablet is now available from stock – Archive price £305.

• **Word Power Shareware** – Word Power was mentioned in last month's products available section. Since then, Ian Copestake Software have pointed out that the software is in fact shareware and not public domain. The difference being that the user is expected to pay on registration. The price being £41.40 inc. per copy (less any initial costs). For this you get a manual, function key strip and technical support from the author.

Review Software Received...

Apart from reviews already written, we have received review copies of the following software:

Noah Paint 16 from GMA, Desktop Games from Anonymouse Ltd, !Calc (a spreadsheet) from Colin Turnbull, Alps System (adventure creator) from Alpine Software, ROCK (concept keyboard software) from Sherlock Rehab Data. A

Forthcoming Products

• **Accounting Packages** – Anonymouse are developing a business information system to include telephone numbers, names, addresses, sales and purchase ledger details, a letter database, etc. Price and availability have not yet been determined.

• **ArcTFS** – Existing owners of ArcTFS will be able to upgrade to Clare Knowledge Organiser by sending their original disc plus £40. Clares hope to release Knowledge Organiser in a few weeks time.

• **ARM3 upgrades** – another source – Gnome Computers Ltd hope to release their ARM3 at £495 ex VAT and 8M upgrade at £950 ex VAT (for A400's and R140's) by December 1989. Both upgrades are user-installable and offer compatibility with ARM2, RISC-OS and RISC iX.

• **Artisan 2** is an enhanced version of the original Artisan, but still working in mode 12 with 16 colours; improvements included are RISC-OS compatibility, plus various additional features such as air brushing, grid-lock, rubber banding etc. It is priced at £59.95 with an upgrade facility offered to existing Artisan customers for £30 – the original disc having to be returned and the registration number quoted. Clares say it should be ready in "about a week or so's time". (4 weeks ago it was "about two weeks".)

• **Cambridge International Software** have released a list of their proposed 'future products'. It is a little on the ambitious side, boasting 17 new titles: 'Learning English' (£24.95) an educational package for students learning English; 'Memory Magic' (£24.95) another educational package to help you develop you memory skills; 'Allen Fighter' (£19.95) a flight simulator based on the arcade game After Burner; 'Racer' (£19.95) a car simulator based on the arcade game Out Run; 'Confusion II' a true 3D Breakout program, 'Rom wonder I-III' (£24.95) a compilation of your old favourite arcade games; 'Ham Paint I, II and super' (£64.95, £95.95 and £190.95) art packages boasting 512, 4096 and 8000 colours; 'Drummer 1/2/3' (£34.95) a drum synth offering waveform editing, 8, 12 and 24 track playback; 'Energy' (£24.95) an educational package that is all about energy; 'Time Lords' (£24.95) a role-playing game based on the Atari ST game Dungeon Master; 'Hypercheque' (£99.95) a word processor with built-in Thesaurus; 'The Year 3000' (£19.95) a 3D solids game based on Elite and Zarch; 'Footy' (£24.95) a 3D digitised soccer simulator; 'Arcade Construction' (£32.95) an arcade-game constructor based on similar packages for the CBM/ST/Amiga; 'Jimmy' (£62.95) a 6 disc cartoon game. *(We have tried on a number of occasions to get in touch with CIS to check availability but be so far had no success.)*

• **Cops** – Alpine Software hope to release a new adventure game in October. It includes hi-res graphic screens, a RAM load/save option, mouse or keyboard control and the full Archimedes parser. The theme of the adventure is 'Spend a day with the cops of the Hall Street Precinct and solve the mysterious cases of robbery at the grade school and the baffling disappearance of Police Chief Davids'. It will cost £19.95 inc p&p.

• **Data Vision relational database** – Silicon Vision are producing a relational database management system consisting of label printing, reporting, word-processing & mail-merging facilities in one integrated environment. Price and availability are not yet known.

• **Financial Accountant** – Silicon Vision are producing a complete integrated business accounting & database package which includes their relational database management system Data Vision together with turnkey applications for order processing, invoicing, sales ledger, purchase ledger, cash book, nominal ledger, stock management, reporting, generation of trial balances, Profit & Loss a/c and Balance Sheet. Price and availability are not yet known.,

• **Games from Impact** – Impact Software/The Fourth Dimension are developing 5 new titles to compliment and extend their existing range of Archimedes games.

E-Type designer (£16.95)	3rd week of October
Arcade Soccer (£19.95)	Last week of October

Holed Out designer (£19.95)	1st week December
The Olympics (£19.95)	1st week December
U.I.M. (£29.95)	1st week December

• **GMA** are developing two new programs 'Noah Title' and 'Noah Animator' to complete their video software range. They hope to use the completed software, with the ArVis podule, on a TV computer corner that they present twice a week. Their 256 colour art package is scheduled for release in October.

• **Hawkridge Labyrinth** – Anonymouse are developing a maze-based graphics adventure game. It will include many sprites, combat sequences and sounds effects.

• **Impression** – the new desk-top publishing package, has apparently been available in a "pre-release" version since early September. The advice from Computer Concepts for "novice" users was and still is, to wait for the release of the final version since in the pre-release version certain features that are not fully implemented and, in particular, the manual is only half its intended final size. Impression will apparently incorporate copy protection in the form of a "dongle" (i.e. a hardware connection that plugs into one of the sockets on the back of the Archimedes computer), this is perhaps preferable to Minerva Software's approach of using a "key" disc which has to be inserted in the disc drive each time the package is used; but the whole subject of copy protection clearly arouses strong views as noted in earlier issues of Archive. At the time of writing Impression is not yet available although in early October Computer Concepts quoted a likely release date of some 4/5 weeks time.

• **Logic Works** – CAD Soft Systems are converting this digital simulation package from the Apple MAC to the Archimedes. See the Show report for further details.

• **Macro Manager** – this package from Silicon Vision will provide a 'hot key' function which will perform your most frequent tasks within the desk-top with a single key press. Price and availability are not yet known.

• **SCSI – Large internal SCSI drives** – If you want a large drive inside your A310 (or even your A410), Oak Computers will soon be selling 135M and 180M SCSI internal drives. These will be available through Archive for £1695 and £2195 respectively.

• **SCSI TapeStreamers** for back-up purposes – Oak Computers are producing a SCSI tapestreamer that can backup **any** hard drive including ST506, not just SCSI devices, and you can specify files to be backed up and restored in any way you like, e.g. by name, date, filetype, etc. The ex-VAT prices will be: 60M £1099 + VAT and 150M £1254 (if you need a SCSI card with it, i.e. you have not already got a SCSI drive, add £100 + VAT). These tape-streamers should be available in December. A

Hints & Tips

• ***RMTidy and ADFS** – If you perform a *RMTidy any discs will be dismounted and any directory settings (*DIR) will be lost. This is because this function re-initialises all the modules including the FileCore%ADFS and ADFS modules.

• **Acorn DTP** – if you want to import text that has a return at the end of each line e.g. spooled BASIC programs, poetry, songs, etc then if you import them directly Acorn DTP will ignore the returns and give you a continuous block of text. There is a way around this problem:

1) In Acorn DTP define a new style say PROGRAM or SONG, etc
2) Set the space above parameter to 0
3) Load your text into !Edit
4) Select the find window of the !Edit menu i.e. press <f4>
5) Select the 'magic characters' option
6) Type: \x0A into the find box and /x0a/x0a in the replace box
7) Select the GO option and then select the 'replace end of file' option

The effect is that each line is treated as a new paragraph with its style defined as PROGRAM.

• **Alphabase RISC-OS compatible?** I read Gerald Fitton's tale of woe (Archive 2.12 p43) just two days after encountering exactly the same problem myself with Alphabase. The 'Readme' file on the program disc states that hard disc installation can be done in 'the usual RISC-OS manner' rather that using the 'Install' file. It seems to me that it must be done in the former way! Apart from messing up the configure settings as Gerald describes, 'Install' fails to copy the !Alphabase application directory to drive 4 (it can't, since the *COPY command issued at line 160 has no R option). Remedying this doesn't help: the program still crashes with a 'can't find' message when you attempt to boot via the Library. After wasting many hours in debugging attempts, I scrubbed the lot and simply copied !Alphabase to :4.$, whence the program is run without problems by clicking on the desktop. Incidentally, again contrary to what is said on the 'Readme' file, the floppy disc stubbornly refused to boot on Shift-Break. Bill Templeton.

• **Archimedes Fans** – Ray Maidstone of Norwich has been investigating Archimedes fans (the cooling kind). He says that if you plug in any extensions on to your Archimedes e.g. backplanes, RAM upgrades, etc then you really should be using a fan. This keeps the temperature of the Archimedes at an acceptable level, thereby extending the life of the components.

• **Binary-Chop** – Michael Sawle sent in this routine which can be used for locating an item in an array – one of the beauties of this routine being that it only needs enough characters to uniquely identify the string being searched for. The routine requires data to be stored alphabetically in a matrix M$(1),M$(2),...,M(NR%) where NR% is the number of records currently stored. The routine returns the matrix element number of the desired record (or nearest available).

```
DEFFNbinarychop(find$)
LOCAL A%,B%,R%
where=0 : A%=0 : B%=NR%
REPEAT
R%=INT((A%+B%)/2)
IF M$(R%)>find$ THEN
B%=R%
ELSE
IF M$(R%)<find$ THEN A%=R%
ELSE
where=R%
ENDIF
ENDIF
UNTIL where>0 OR B%-A%=1
IF where=0 THEN where=A%+1
=where
```

In fact this routine should be called a binary search routine. It chops the list of records in two and then checks which half of the data set the search string should appear. It then chops this half in two and so on until finds the string or it realises the string does not exist. This means that the computer can significantly reduce the number of checks it has to

make before reaching a result e.g. if you have 32768 (i.e. 2^15) records then the computer will make a maximum of 15 checks. The price that must be paid for this efficiency is that the data set must be sorted in some recognisable order e.g. alphabetically, numerically, ASCII, etc. The best versions of this technique are usually recursive. (Perhaps someone might like to have a go at writing one?)

• **Colour TV's as monitors** – Several times in Hints & Tips, connection of the Archimedes to colour TV's has been mentioned. I have succeeded in doing just this. In Archive 2.7 p11, Oliver Cornes says that plugging the Archimedes' SCART into a video recorder doesn't work – this is because a VCR only deals with composite signals, not RGB. However, if your TV has a SCART socket, and many new ones do, then connection may well be possible direct to the TV. You will have to tell the TV to use RGB input, not the composite (it only uses composite then for timing). There may be (indeed, it would be odd if there wasn't) a way of doing this with the TV controls. My TV has two sockets and if you tell it to use socket 0 it uses socket one with RGB.

However, I didn't find this out until I found out that one of the pins on the SCART standard is for just this type of use – pin 16 must be between +1V and +3V with respect to pin 18 (i.e. connect a 1.5V battery between them – the –ve end to pin 18, the +ve end to pin 16). The TV then automatically switches to SCART RGB input. Note that this overrides any channel selection made, so you should put a switch in line so you can switch the signal off, otherwise you can't watch TV. Connection to the SCART plug is often maligned as difficult, but it is only a case of knowing how to do it. The proper way is to remove the pin you wish to make connection to, connect it up and then put it back. The pins have barbs to prevent them from falling out, so use a pair of narrow pliers to squeeze the barb back and push the pin out through the rear of the plug. Also make sure that you re-insert the pin the right way round – just copy the other pins. They only go in properly one way round anyway. Kevin Quinn

• **FileCore in use remedy** – If the Archimedes 'sees' too many ADFS directories then a 'Filecore in use' error may occur and you will be unable to save any data in your machine. You can overcome this by typing the following four lines after the error has occurred:

```
*RmReInit FileCore (this will fail giving
      a Bad number error)
*RmReInit FileCore
*RmReInit ADFS
*RmReInit HardDisc (A300's and
      A3000's only)
```

• **MaxGammon update** – The MaxGammon game on Careware 2 cannot be played in mode 15. In order to over come this you should:

1) Load in the BASIC !RunImage file in the !MaxGammon directory.

2) Type the following:

```
10840colour%=FNmg_Colour(mg_red
                         _player%)
11230tc%=mgc_grey_point%
```

3) Save the program.

• **Oak MS-DOS SCSI as Drive D** – I use the PC emulator occasionally for my work. It therefore did not take very long to use up all 10M of the MS-DOS drive C partition on my 47M SCSI drive. The obvious thing to do would be to create another MS-DOS partition for drive D. However on the version of the PC emulator that I am using (Emulate121) the Archimedes hard discs 4 and 5 are mapped to MS-DOS discs C and D. Therefore drive C and D cannot both exist on the same hard disc (on the emulator) and two hard disc drives are required for two partitions.

On the OAK SCSIFS each winchester drive has the following information:-

a) filing system drive number (e.g. :4 or :5)
b) SCSI hardware address (each device on the SCSI bus has a unique address)
c) logical unit number (SCSI 'software' address)

If you are lucky enough to have an OAK SCSI (::SCSIDisk4) with an MS-DOS partition (Drive _C) then here's how to create MS-DOS drive D.

1. Run 'SCSIForm'
2. Note that drive :4 is SCSI ID = 0, LUN = 0
3. Add drive 5 with SCSI with SCSI ID = 0, LUN = 0 (same as drive :4)

4. Exit SCSIForm and enter the desktop. There should be an additional hard disc icon 'SCSI 5'
5. Start up the PC emulator (version 1.20 or greater?)
6. Type FDISK. An extra option should appear (5 – select next fixed disc drive). Select this and the disc drive should now become number 2. Then select option 1 'Create DOS Partition'
7. Type Format D:
8. Type CHKDSK D: (this checks partition is OK)
9. When using the desktop always us SCSIFS::SCSIDisc4. Ignore disc 5

Ralph Barrett

(We have not had a chance to try this out yet, so you follow these suggestions at your own peril. Ed)

• **Recursive directory move bug** – one reader noted that while in the desktop, if you moved a directory into itself (by holding the shift button down while copying) the files in the directory will be moved further and further down a directory tree until your whole disc has been filled with directories! The problem with this bug is that you can't move your files back to their original position because the disc is already full. You must copy the other files onto another disc and then remove the offending directory.

• **To scroll or not to scroll?** The strange behaviour mentioned in the BASIC V Forum (Archive 3.1 p36) is actually caused by the *Configure Scroll or *Configure NoScroll setting. This setting allows us to control the behaviour of the ends of lines. *Configure Scroll should be used for compatibility with earlier machines. The RISC-OS desktop, however, has a habit of countermanding the configured values and in this case it decides that it prefers NoScroll. If you have a program which relies on the behaviour of the ends of lines, then you can execute VDU 23,16,&FE,1 || to temporarily obtain the Scroll option, or VDU 23,16,&FE,0 || to obtain NoScroll behaviour. A

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SCSI Hard Disc Tests

Paul Beverley

A couple of folk from Lingenuity came to Norwich to bring us one of their cards and drives to have a look at. We were able to compare it in terms of speed with the Oak SCSI card. I wrote the rough draft of this article and sent it to both companies. The comments in italics are those added in the light of the companies' responses. (This is another example of the improved productivity gained by using a fax!) I sincerely hope that we won't end up with a 'SCSI War' after our 'Compiler War', but the tone of all comments so far has been at the level of friendly rivalry which, I am sure, will be maintained!

Speed isn't everything

The Lingenuity drives are slower to some extent than Oak's, but speed is not everything, so it is worth pointing out that one other difference between the Oak and Lingenuity drives is that the Lingenuity manual, although it was just a draft version, is a lot more comprehensive than the Oak one. *(Oak say they have done a larger manual but are holding off printing it until Acorn finalise their SCSIFS standard. They want to be able to make final alterations which may be needed to keep their SCSIFS compatible with Acorn's.)*

(Lingenuity would like us to get the whole speed thing into perspective by thinking in terms of the loading times of a typical 512k file which would be about 20 seconds from floppy, 2 seconds from an Acorn 20M drive and about 0.6 seconds from a 100M SCSI drive so that a few percent difference in speed for loading and saving files in everyday use is not significant. On the other hand, say Oak, if your application uses the hard disc intensively as it would, for example, in video processing then you may well need all the speed you can get. The speed differences, they believe, will be more on larger drives.)

Compatibility with ADFS?

One question that has to be asked is, "How compatible are the SCSI interfaces with ADFS?" Well it would need someone a lot more technically competent than myself to tell you that, so until people actually start using the Lingenuity drives in numbers, we won't hear of problems. There are a lot of Oak drives being used and we haven't come across any incompatibilities that haven't been able to be solved, but Lingenuity were keen to point out that they have paid lots of pennies to Acorn to license parts of the ADFS code to ensure compatibility whereas Mike Harrison, for Oak, has written the code from scratch. *(Oak assure us that Mike has managed to keep their SCSIFS completely compatible with Acorn's even down to level of the SWI calls.)*

(A technical aside: Oak explained, in answer to a query in a previous article, that although the SCSIFS is not ADFS, it IS an E-format system so, especially with the larger drives, you should never ***need*** *to do a *compact although after a lot of use, it would help to reduce fragmentation. The same is true of the Lingenuity system.)*

What do you think?

It would be helpful to hear what you, the users, think. If you get hold of a Lingenuity drive and start using it, perhaps you would let us know how you get on. The one I tried was brought up to Norwich by Jack and Wouter from Lingenuity, so I only had a brief look at it.

Speed tests

Lingenuity had their own speed test and I also used the speed test produced by Oak so that we could compare the two. To give a fair comparison, we used exactly the same drive – a 100M drive that Lingenuity brought for demonstration purposes. The Lingenuity test reads and writes files repeatedly and gives the speed for the two operations in kbytes/sec. Remember that these speeds are fast compared with the standard ST506 drives – for example, the Rodime 60M drives give a speed of something like 420 kbytes/sec in mode 0 and plunge to around 20 kbytes/sec in mode 21 which is about the speed of a standard ADFS floppy!

(Oak pointed out that although this ***seems*** *to be a fair test in that it uses exactly the same drive on both boards, other factors need to be taken into account. The point is that the speed of the data transfer could*

either be limited by the speed of the drive or by the speed of the SCSI interface or, as in the case of mode 21 transfers, by the computer itself. Oak's claim is that the 100M drive (18ms access time) used was relatively slow and that a faster drive (such as Oak's own 135M (14ms) external drive at 1352, 1103, 590 kb/s in modes 0,15, 21) would show that the Lingenuity interface was unable to keep up with the speed at which the drive was able to deliver the data. Lingenuity challenge this and say that their board is certainly able to keep up with the drive. I'll have to see if I can get together a Lingenuity board and an Oak 135M drive to put it to the test.

Looking at the figures below, it seems as if the basic speed of the drive (in 1:1 interleave) is around 800-ish kb/s and that the Lingenuity board is limiting it, whereas in 2:1, at the speed of 452 kb/s neither of the boards is causing any limitation. Again, Lingenuity challenge this claim. Oak claim that they have not yet found a drive on which their board shows any speed limitation – even up to a 330M drive and even though the larger drives have sizeable ram buffers on them to improve the throughput.)

Results of tests with Oak and Lingenuity SCSI interfaces on a 5.25" 100M SCSI drive:

Lingenuity Test	**Oak**	**Ling'ty**	
Mode 0 (write)	856	701	(18%)
Mode 0 (read)	883	811	(8%)
Mode 21 (interleave 2:1)	500	326	(35%)

Oak Test	**Oak**	**Ling'ty**	
Mode 0 (normal)	824	768	(7%)
Mode 15 (normal)	824	537	(35%)
Mode 21 (normal)	501	291	(42%)

Oak Test	**Oak**	**Ling'ty**	
Mode 0 (interleave 2:1)	451	452	(0%)
Mode 15 (interleave 2:1)	452	452	(0%)
Mode 21 (interleave 2:1)	452	291	(36%)

What does it prove?

What, if anything, do these speed tests prove? Firstly, when using the alternative interleave (which you need in order to get something more than floppy disc speed in mode 21), the Oak

interface is about 50% faster. This is probably because the Oak board takes the data off the computer's data bus in 16 bit chunks rather than 8 bit as in the case of the Lingenuity board. In the normal interleave mode which most people would use, both interfaces are around 60% faster than in 2:1, though the Oak one is still around 10% faster than Lingenuity. *(See also the comments above.)*

Prices

The Archive prices for the two systems are as follows, all prices are inclusive of VAT and carriage and include the price of the podule:

	Lingenuity		Oak		
	List	Archive	List	Archive	Drive
20M int	–	–	448.50	420	Seagate 28ms
20M int	431.25	410	–	–	Seagate 40ms
45M int	–	–	586.50	545	Seagate 28ms
45M int	573.85	545	–	–	Seagate 40ms
70M int	–	–	1046.50	970	Seagate 28ms
75M int	918.85	870	–	–	Rodime 18ms
105M int	964.85	910	–	–	Rodime 18ms
217M int	1436.35	1355	–	–	Rodime 18ms
20M ext	–	–	626.75	590	Seagate 28ms
20M ext	534.75	505	–	–	Seagate 40ms
45M ext	–	–	764.75	710	Seagate 28ms
45M ext	677.35	640	–	–	Seagate 40ms
70M ext	–	–	1224.75	1130	Seagate 28ms
75M ext	1022.35	965	–	–	Rodime 18ms
90M ext	–	–	1453.60	1340	CDC Ren 14ms †
105M ext	1068.35	1005	–	–	Rodime 18ms
135M ext	–	–	1886.00	1770	CDC Ren 14ms †
170M ext	–	–	2144.75	1980	CDC Ren 14ms †
330M ext	–	–	3289.00	3040	CDC Ren 14ms †
Std podule	228.85	215	238.05	220	
Mini podule*	171.35	165	–	–	

† Oak have rationalised their list of larger drives by taking on the faster CDC drives. This information is more up-to-date than the advert opposite. Give Oak a ring if you want more details.

**The internal mini podule for the A3000 only has an 8-bit bus available so the Lingenuity board, being 8-bit, can be electrically the same as the standard podule and will work at the same speed.*

Conclusion?

It's impossible to draw any firm conclusion at this stage. If you have to load and save in mode 21, then it looks as if the Oak system is better, though they are more expensive, especially for the larger drives. For normal use, there seems to be not much to choose. If you want to go for a larger drive then I suggest you wait until we have been able to get some more reliable comparative tests done.

(This article has taken absolutely ages to write and research but I don't think we are a lot nearer to being able to give advice to readers as to which system to go for. We do need to try out the systems a bit more and we do need the readers' views.

I must compliment both Oak and Lingenuity on their professional attitude to the whole thing. They both realise that what is said in this and other magazines could make a lot of difference to their sales and so they have both tried to get me to understand the issues involved and the strengths of their systems but neither of them has tried to use undue pressure to get their points across. Thanks guys!) A

20" MULTISYNC

The Oak PCM 20 multisync monitor is designed specifically for use with the Archimedes range of computers. It has external adjustments for width, height, horizontal and vertical position for each of 3 frequency bands and automatically selects the correct band for all Archimedes screen modes except 23 (hi-res mono). A TTL input is also provided for use with Model 'B's, CGA, EGA etc.

PCM20 **£1495.00** *P&P £15.00*

WORRA PLOTTER

Worra Plotter is a desktop utility which allows draw files to be plotted on HPGL compatible plotters. Pen speed, colours and paper size may be selected and output can be scaled and offset before being sent to the plotter via either of the ports, the network or to file.

Worra Plotter **£29.95** *P&P £4.50*

WORRA BATTLE

A challenging arcade classic demonstrating the amazing speed of the Archimedes. Pilot your high speed battle tank and attempt to destroy the enemy invasion fleet. Protect yourself from enemy fire by hiding behind the ancient monoliths or by using your limited flight capability. Watch out for the deadly heat seeking neutron fire. Stunning 3D graphics accompanied by realistic digital sound make this a game not to be missed.

Worra Battle **£14.95** *P&P £4.50*

SCSI CARDS AND WINCHESTERS

Oak's high speed 16 bit SCSI podule offers a new level of performance for the entire Archimedes range with data transfer rates of up to 1.3Mb per second, up to 2 gigabytes of winchester storage per machine and support for seven SCSI devices including 4 winchesters. The card provides a new filing system 'SCSIFS', an icon and filer for the Risc OS desktop. It can work in tandem with ADFS winchesters and is compatible with the PC emulator. Low level support is provided for other SCSI devices (e.g. tape streamers, CD Roms etc.) Internal winchester kits are supplied as plug in and go units with all necessary cabling and mounting hardware, and external drives are housed in sturdy metal cases, colour matched to the Archimedes, and have their own power supply and fan. External drives are also suitable for use with the A3000 - please specify when ordering. Drives up to 70Mb include a £10 voucher for Mitre's Disc Tree backup software, whilst drives over 70Mb include a free copy of Disc Tree.

Internal Drives *(inc. SCSI card)*		**External Drives** *(inc. SCSI card)*	
20Mb	**£375.00**	*20Mb*	**£535.00**
45Mb	**£495.00**	*45Mb*	**£655.00**
70Mb	**£895.00**	*70Mb*	**£1055.00**
SCSI CARD		*100Mb*	**£1450.00**
SCSI Podule only	**£199.00**	*200Mb*	**£1850.00**
		330Mb	**£2400.00**

Extra external winchesters subtract £100 from price including card. P&P £15.00 on all drives (£8 for SCSI card).

ST506 WINCHESTER DRIVES

A wide range of both internal and external ST506 winchesters is available from Oak, making use of the Acorn hard disc controller. Internal drives are supplied with all necessary leads and mounting hardware, and external drives are housed in metal cases with PSU and fan and come complete with cables, socketry and metalwork for the back of the Archimedes. A 64Mb drive is available especially for use with the R140 and is supplied with software for partitioning between Risc iX and ADFS.

Internal Drives		**External Drives**	
20Mb (65mS)	**£299.00**	*20Mb (65mS)*	**£349.00**
40Mb (65mS)	**£379.00**	*40Mb (65mS)*	**£478.00**
40Mb (28mS)	**£555.00**	*40Mb (28mS)*	**£665.00**
47Mb (28mS)	**£650.00**	*64Mb (28mS)*	**£765.00**
P&P £15.00 on all ST506 drives.		*64Mb (for R140)*	**£795.00**

PARAMETRIC DESIGN TOOL

Oak PDT is probably the world's most advanced Parametric Computer Aided Design package. PDT works in a different way from traditional co-ordinate based CAD systems by storing mathematical and geometric relationships rather than simple co-ordinate information and therefore has several important advantages. Any edit made to a design automatically updates the entire drawing to cater for all the 'knock-on' effects of the change and hence allows design options to be quickly investigated and evaluated. Any drawing created within PDT is, in fact, a working model and so, for example, if an internal combustion engine is drawn and the crankshaft is turned, all the other components related to the crankshaft will automatically be moved to the correct position. Animation sequences may be automatically generated to show designs working. The mathematical behaviour of the design may be built into the drawing so that the model may be thoroughly tested even before any hard copy is produced. PDT supports 64 layers, a comprehensive range of geometric constructions, zooming and panning, automatic associative dimensioning and takes full advantage of the floating point co-processor if fitted. Hard copy output is to HPGL compatible plotters and Epson compatible dot matrix printers. PDT can output sprites to painting packages, and DXF files to other CAD software and !Draw - and then on to DTP or Risc OS printer drivers.

All prices exclude VAT *PDT* **£359.00** *P&P £6.00*

Oak Computers, Cross Park House, Low Green, Rawdon, Leeds LS19 6HA Tel:0532 502615 Fax:0532 506868

Readers' Comments

• **Atelier** – CAD for RISC-OS? – no doubt Atelier is, as Mark Sealey suggests, a very good program, but it is NOT a CAD package. It is very misleading to use that expression. V. Arious.

• **Amiga rules OK?** – Dr Mike Smith wants to challenge Stuart Halliday's statement in his review of Chromalock (Archive 3.1 p37) that "the Amiga will always be better for doing video production". He is using a Video Electronic board which provides a full screen raster which Stuart said was not possible. Mike is going to write a review for us of the Video Electronics board, so watch this space.

• **Installing software on a hard disc** – I understand that, for some people, especially hard disc users, a copy-protected software package can be the cause of some annoyance. Although most of these programs can be installed on the hard-disc they still require the original disc to be inserted in drive 0. Before I continue let me state that I do not support software piracy, but this does not mean that hard-disc users have to suffer. There are other ways to protect a program. A second problem is that the owners of the original disc have to use that disc every time, with backup possibility whatsoever.

For instance, Sigma Sheet has the above mentioned copy protection. It can be installed on the hard disc but the original disc is still required. I think I have found a solution to this problem.

It exists out of 4 programs, 3 of which require the original disc. The version I 'studied' was version 1 upgraded for RISC-OS via the Acorn Support Disc.

1. Make a back up of your Sigma Sheet disc or alter the files on hard disc.
2. Go into the BASIC Editor. Press <F1> and set the directory to !Sigma (hard disc users may need to use a different path) using *DIR.
3. Load the file 'SigSheet' and goto line 1380.
4. It should read:
   1380 PROCSS(SSinit,0,0,0,0)
   Change this into:
   1380 REM PROCSS(SSinit,0,0,0,0)
5. Save the file.
6. Repeat 3-5 with file 'SS-Util' on line 1570 and file 'SS-Totals' on line 760.

If you start up Sigma Sheet now you won't need the original disc any more. Maurice Hendrix

• **PipeDream dictionary problems (cont)** – following my comments in Archive 3.1 p13 in which I mentioned a problem with the user dictionary in PipeDream 3, Colton Software have now returned my master disc updated for the solution they found for this bug. I have tried out the revised version and it appears to work perfectly.

In the process of installing the new edition of Pipedream 3, I came across a hitch that may be worth mentioning. As I copied across each file from the PipeDream floppy disc onto my harddisc, I decided to protect each file against accidental deletion be modifying the 'Access' status available under RISC-OS. Having copied across each file in this way, I tried to install PipeDream and was answered by a Can't Install message. I wondered if modifying the Access status on the files was the cause – I cancelled the protection against deletion and, hey presto! instant installation. A classic case of being a touch to clever in using the Archimedes.

Cedric Peachey

• **Hard disc speed tests** – Ray Fox – I am sceptical about the claims that SCSI is faster than ST506, although I am prepared to be persuaded. My comments on the article are as follows: (a) Oak Computers claim it it is faster because they are using 16 bit data transfer. I don't understand. The SCSI standard does in fact have an 8 bit data bus and parity associated with a 9 bit control bus. It may be that once they have buffered this data on their interface they read it 16 bits at a time. This, however, is no different to Acorn's interface as far as the computer controller interface is concerned. (b) Traditionally SCSI maximum data rate is declared as up to 4Mbit/s where as ST506 is fixed at 5Mbits/s. This would appear to give ST506 the advantage. (c) In comparing SCSI rates and ST506 rates one should ensure you are comparing 'like' drives. Whilst I accept that the interface will be different, you should ensure that the drives

concerned have the same number of heads and same stepping rates. The number of heads probably is the most critical aspect as with the larger capacity drives there will be more heads and as switching between heads can be done in micro-seconds as opposed to mili-seconds to step one track, the larger drives will apparently give higher transfer rates. Also the other aspect to consider is 'interleave' and 'skew' – these need to be optimised for any give type of controller – presumably this is what Oak have done on their 'alt format'.

Phil from Oak pointed out that transfer bit rates quoted are correct for synchronous data transfer but that in the asynchronous mode, SCSI drives can go up to a maximum (theoretical) 16Mbits/sec, i.e. 2,000 kbytes/sec. (Oak's own large drives can transfer data at 1352 kbytes/sec.) The point about the 16 / 8 bit transfer is that the data is pulled off the Archimedes bus onto the podule 16 bits at a time instead of 8 bits and then transferred down the SCSI cables 8 bits at a time.

His third point is interesting in theory but the real question is, in practice, how big a drive can you get for how much money and how fast can it transfer data? There is some information in my article on page 10 but more will hopefully be forthcoming once the drives become more readily available and we get a chance to test them out. Ed.

• **4-slot backplanes** – Gary Atkinson had problems getting his Atomwide 4-slot backplane and OAK SCSI hard drive working. When contacted, Atomwide suggested that interference might be the problem and they sent him a replacement board straight away. However, Gary concluded this episode in his letter by stating: 'It seems that the use of a multi-layered board may well become necessary with 4-slot backplanes'.

• **Armadillo A448 sound sampler podule** – Armadillo would like to point out that the review by Stuart Haliday was of the mono sampler and Aedit software not the new RISC-OS HighNote software and the stereo samplers. The HighNote software includes: disc and memory management facilities, envelope editor, voice set up/midi module and sample editor. The software is fully WIMP driven, offering a tools and objects concept, with which samples can be edited.

• **Hardware project at last** – Congratulations to Elektor magazine *(who subscribe to Archive magazine! Ed.)* for being the first magazine that I have seen to produce a sizeable hardware project for the Archimedes. In the November issue of Elektor is the design for a podule which provides a MIDI interface, a sound sampler and a user port. Chris Walker and others.

• **To dongle or not to dongle...** the really bad news is that Computer Concepts intend to use a hardware 'dongle' attached to the printer port, as a means of copy protection, with Impression. This has received far less publicity.

Any form of copy protection can be regarded as bad news, but I consider 'dongles' to be particularly undesirable. Once I had the misfortune to unwittingly purchase a program which relied on a hardware dongle. This dongle caused nothing but problems, the worst being that if something went wrong whilst running, the whole machine locked up and had to be reset, with the loss of any data in the machine. Eventually I gave up using this program.

Personally I think CC are making a terrible mistake with this 'dongle' and that they will come to regret it. As far as I am aware there has never been a truly successful 'dongle' which didn't cause problems for legitimate users. If CC have found this 'Holy Grail', surely they should sell it to all the other software producers and no doubt make their fortune, rather than try to finish Impression. If all the software companies started using 'dongles' where would we put them all – imaging a computer with 12 'dongles' attached to the back!

It is unlikely dongles will be acceptable in an educational environment, using networks. Here any 'dongle' is likely to cause havoc – having to fit the right 'dongle' to the right machine and the risk of it being lost or stolen.

Another factor which CC appear to have overlooked is that by fitting a dongle they are excluding themselves from selling to the professional market, where a hardware protection is completely unacceptable. In this they are likely to be harming themselves, as it is clear that the Archimedes with the right software has considerable potential as a professional low cost/high performance DTP

system. Certainly far better than the vast majority of IBM systems in use and cheaper then most Macintosh systems.

However, my main purpose in writing to you was not to air my personal views on dongles, but to complain about CC's advertisements which have appeared in Archive and elsewhere. These advertisments and their publicity material make no mention of the dongle, despite a list of the contents of the package being included. I regard this as being seriously misleading and consider that it should be clearly stated that a hardware protection method is being used, so that people can make up their own minds if they wish to purchase this program. I know CC say they offer a money back guarantee but this doesn't apply to packages purchased from third parties. I would be very upset if I unwittingly purchased an expensive program like Impression, which relied on a hardware dongle and I am sure many others would as well.

Certainly I don't intend to purchase Impression, even if it is very good, unless CC change their minds about this hardware 'dongle'. In any event it appears that there will be plenty of alternative DTP programs for the Archimedes, with Acorn Desktop Publisher already on sale and other DTP programs promised from Beebug, Clares and Minerva.

Michael Lowe

• Mach Technology

– Here is an extract of inform-ation on Archive BBS about Mach Technology. I simply pass the information on without comment. (Well, almost!) Ed.

Alan Glover writes... Things are now beginning to look bad on the Mach front. Here is a summary of the latest information, based upon information on MicroNet.

- Stockton CID are now investigating Mach.
- Neither MicroNet, nor me, know of anyone who has had goods from Mach. *(Nor me. Ed.)*
- BAU and Micro User will not be printing their adverts next month. Both have not been paid since July/August.
- Customer's cheques are being cashed but contacting anyone is just about impossible.
- Trading Standards Officers have also become involved.
- If you have a complaint against Mach, we'd like to know to assess the scale of it. Send any details to mailbox 13 on Archive BBS and I'll pass details to Paul Vigay for MicroNet. *(Or send it to Archive office.)*
- You can also contact Stockton CID on 0642–607114.
- The premises were visited. They seem to be just a mail drop.
- Stockton Police visited the premises. Turns out the landlord is also owed money and doesn't have a forwarding address. Mail is collected.
- No one has been seen at Mach for about 4 weeks.
- Their office equipment is still there.
- They have contacted the landlord for mail, so are still about.
- Recorded delivery letters are being accepted by the Health Authority Office which is adjacent.
- Mach is two men and a secretary.
- The office was rented on a short (6 month) basis.
- Someone has done some research at Companies House. They have 'sleepers' as Directors from a firm called 'Secretaries Ltd'. Hence there's no link to the actual people in Mach.
- Mach haven't filed their accounts (due in May). Companies House said that the director and secretary listed are unlikely to be involved in the business and that they could give not a credit rating for the company.
- The registered company address is 75 Hyde Wood Road, Little Yeldham, Colchester, Essex CO9 4QX.
- People who have ordered through magazines which participate in the Mail Order Protection Scheme have a fair chance of having their cheques refunded from a fund kept for this kind of event.
- Mach are not actually declared bankrupt, though rumours are persisting from various sources. Certainly it's likely that their creditors (such as B.A.U. and M.U.) will attempt to wind it up.

If anyone has any more information please put it up on the board or send it to Paul Beverley.

Opinion: This is just the kind of thing a fledgling computer like the Archimedes doesn't need. Customers now have:

a) Less faith in suppliers who aren't ready with their goods

b) A distorted idea of a sensible price for products ("... Mach did it for xxx. Why can't you?")

c) A nasty taste, which could well detract from the otherwise (fairly) reliable mail order business for the Archimedes. This is especially serious for the Archimedes, where mail order is still the prime source of products, since there isn't the volume yet to populate a decent number of shops.

• **Acorn – the Short Term Future?** Those of us who have followed Acorn over the past few years will know how erratic success has been for them. The Archimedes should herald a new age of prosperity for Acorn. However, Acorn must continue to exploit the incredible ARM chip they have created.

MS-DOS Arch?

The addition of the ARM3 chip to Acorn's armoury should keep the market at bay, but not for long. If Acorn does not attack the PC market as well as controlling the educational world, they will fall flat on their faces again. An Archimedes with an INTEL processor, probably an 80386 (33 or 25 MHz) and a quad-density disc drive would be able to totally out-perform any other Compatible in the world. An ability to run MS-DOS, CP/M, OS/2, etc within a window on the Desktop would make the computer (A386?) a formidable enemy for all other manufacturers in the world. Too much to hope for? Why? Many companies are working on 286 boards so why not a 386 on the main board?

Large UNIX

Other future machines may well be larger UNIX work stations. 8 or 16 Mega- bytes of memory and an ARM3 chip would make an impressive machine (R180 & R1160?). At the same time increasing the clock speed of the machine to say 16MHz or even 24MHz would make for a more credible sounding machine. (We know how fast only 8MHz is but the rest of the world does not). This would require a new MEMC chip so a limit of perhaps 32 Mbytes would be a sensible step which would pave the way for the biggest Archimedes' ever.

Archimedian Network?

I feel that another area of advance must be in the area of Networks. At present the Archimedes can use Acorn's Econet network but this was designed for BBC Micro's, not Archimedes. Ethernet is also available but not an acceptable option for any Archimedes except the R140 series. Any new network must be as radical a concept as the ARM chip.

If you run the little program on the Desktop which shows the CPU usage then you will realise that there is much of the time when it does very little at all. If however you make it do something hard (like !Music) then it will show how hard it can be used. Any network should be able to make use of the spare moments of all the Archimedes on the network. When the activity on one machine is very high the network should be able to find a spare machine which will share the workload. The amounts of data required to be transmitted for this to work satisfactorily would be very large and need to be done very, very quickly.

There are two ways of approaching the problem of how the two machines would share the workload. The first could be that the ARMs have some sort of cacheing system for the commands. Communications could be carried out between any two of the caches. Commands could then be shared and passed easily between them.

The second (and probably the more practical) is that the extra machine should take over one (or more) of the applications from the slower machine. The slower computer would then only have to handle input and output for that application under control from the extra Archimedes.

The biggest problem is how to link the machines. Coax is a possibility but would need to the best quality in the world to carry data at the required speed so as not to slow down the two Archimedes'. Using a parallel link would also be very expensive. 32 bit parallel cable is not cheap! Coax and parallel links would both be prohibitively expensive. The only practical alternative is Fibre-optics. Again they are not cheap but at the high speeds required would be much cheaper.

Much of this probably sounds very far fetched and impossible, but 5 or 6 years ago Acorn releasing a 32 bit RISC based chip and computer would have sounded equally unlikely. With Acorn all things are Possible?!? A

John Krakenburg

Ed's Comments

• **Archive BBS password** – The new password for the Archive BBS is "pizza".

• **BBC Micro Software for Charity?** – In last month's magazine, I said we didn't want any BBC Micro software for sale for charity as I had no outlet. However, Robin Wilson has very kindly offered to find buyers for the software. So, if you have any BBC Micro software that you would be happy to get rid of, send it to Robin at Eastbourne College, Old Wish Road, Eastbourne, BN21 4JY. Phone (evenings) 0323–643570. Thanks, Robin!

• **Fax is no fun (for Ali)** – Last month we said that if anyone wanted to order something from us and was in a really desperate rush they could use our fax. The idea is that if they really couldn't wait the time it takes to send a first class letter to us, they could fax us an order with a cheque and we would fax back an invoice and send out the goods straight away. Unfortunately, this offer is being mis-used. People are ordering that way just because they don't want to wait the extra day – one person admitted that he was doing it "just to try out the system"! It makes more work for us and so, if the system continues to be misused, we will have to make an extra charge for fax orders.

• **How standard is SCSI?** One or two folk have asked technical questions about the SCSI interfaces and drives and Phil Driscol of Oak computers has answered them for us. The main question asked was about the compatibility of the SCSI interfaces on the Archimedes with SCSI drives and devices not necessarily designed for the Archimedes. Phil says that some of the very earliest implementations of SCSI were not mutually compatible but in his experience, all the drives he has tried on their SCSI interface podule have worked well. The only exception was a make of drives that are available at rock bottom prices: Zibek Owl was the name. Other than this, all worked well. We have been asked about the access speed and head positioning mechanisms of their various drives. Apparently, they are all 28 miliseconds or better (some down to 14ms) and all use voice coil actuators instead of stepper motors. The 20 & 40M drives are made by Seagate, the 70M internals are Rodimes and their newer internal drives, 135M and 180M are CDC Ren and Miniscribe respectively.

• **Why are Archive prices so high?** – We have had one or two complaints recently that our prices are too high. To be more specific, we have been told our RAM prices are too high and that we shouldn't be selling Archimedes computers at list price.

For some time now, as you may have noticed, the price of RAM for the 410's has been dropping (from £210 to £120 per Mbyte). However, one reader discovered our source of ram chips and worked out that, at price we were selling them at the time, we were making about 50% profit! He accused us of making an un-Christian profit. (What if I had been an aetheist?!) The reason I have reduced the price gradually month by month, slower than the reduction in purchase price, is that I had to be sure the price was sustainable. If I had dropped the price to £120 straight away and then the supply of the cheaper chips had evaporated, I would have had to put the price back up again and then there **would** have been some complaints.

As far as the computers are concerned, you will doubtless be able to buy Archimedes computers elsewhere cheaper than through Archive but we like to think that what we are supplying is a good backup service in terms of technical support and we think that it is worth paying for. In a way, we don't really want to sell too many anyway, otherwise we would find it difficult to maintain the quality of the technical backup service.

• **Educational discount** – We do sell Archimedes computers at less than list price, but only to education. A410's are available on official education orders for £949 + VAT and A3000's for £545. These prices are set by Acorn and we claim a rebate from them for each one we sell.

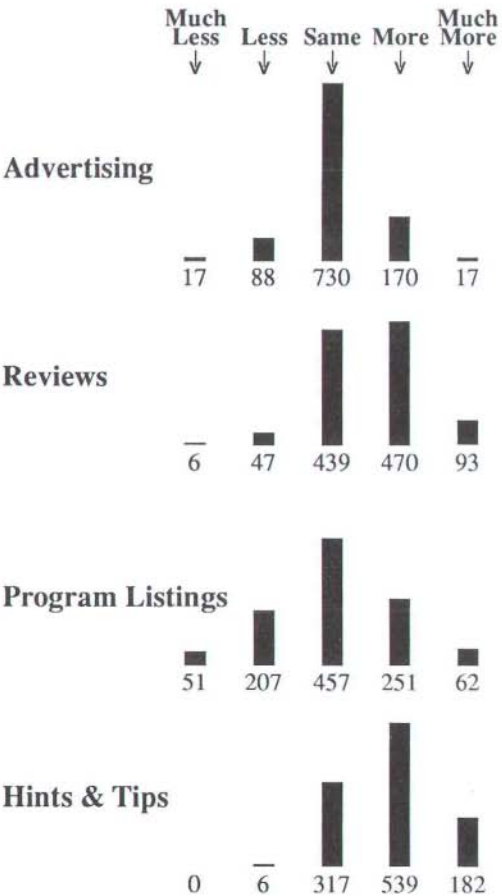
• **"Could I have the subscriptions department please?"** – We are always amused when we get this kind of telephone enquiry because the whole of the Archive empire takes up one room (albeit a rather large room) in a private house. Paul, Sue, Ali(son)

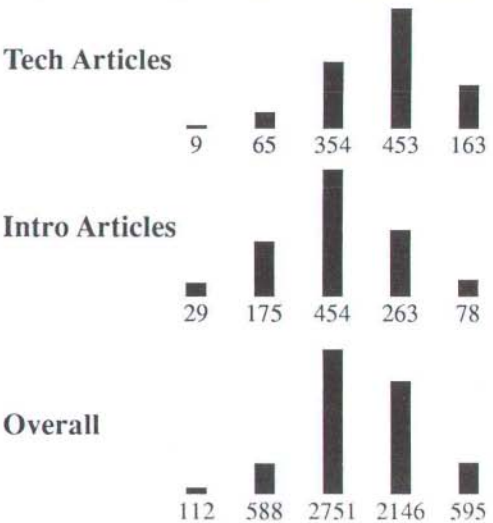
and Adrian (afternoons) helped by Roger one day a week on accounts, do the whole thing. When the magazine arrives back from the printers each month, Sue, ably assisted by her Mum and Dad, work round the kitchen table, stuffing the magazines and inserts into envelopes and franking them. (Mum sticks the labels on the envelopes at home in the evenings a few days earlier.)

We are not set up as a shop and do not have a show room, but we are happy for people to pop in and visit us – the house is on the ring road, south of Norwich, just near the A11. The only thing we would ask is PLEASE DO NOT PARK IN MILE END CLOSE. It is a private road and the local residents object (quite reasonably) to people parking outside their houses. Please either park on the main road in front of the house (there are no yellow lines), or pull into our newly widened front drive or park in Melrose Road (the next one away from the Newmarket Road).

• **Survey Results** – With having been out of action a bit this month (see inside front cover), I haven't read through **all** the comments you wrote on the response forms. Ali has typed up the comments for me and, not including those where people write a page or more on a separate sheet, I have 32 pages of typed comments to read and I'm only about a third of the way through so far.

What I can do though is to give you the numerical responses for the specific questions that were asked.





This last figure shows that, overall, you want more of everything(!) but if you make up a desirability index by doing a simple average, the results in order are: (3 = same, 4 = more)

Hints & Tips	3.86	
Tech articles	3.67	
Reviews	3.57	
	3.41	Overall
Intro articles	3.19	
Adverts	3.08	
Prog listings	3.06	

We asked how often people read the specialist sections within Archive. The results are given below, but to try to make some sort of sense of the responses, I have done an index where 1 = Never, 2 = Sometimes and 3 = Always.

It is important to realise that all that this indicates is whether the topic is of more **general** interest or more **specialist** interest. It does **not** indicate (and I am saying this mainly for the benefit of the editors of those sections) how good or bad the sections are. There could be a section that was extremely well researched and written and that was absolutely invaluable to those who were interested in it – but that might be only a very small number of people, in which case it would come bottom of the list. (Keep on writing, Gerald. Your section is, I know, very much appreciated by Pipedreamers!)

	Never = 1.0	**Some-times**	**Always** = 3.0	
Hardware Column	6	205	837	2.8
BASIC Forum	49	371	603	2.4
Introductory	67	456	468	2.4
MS-DOS	197	358	478	2.3
Languages	120	538	399	2.3
First Word Plus	263	309	447	2.2
BBC compatibility	284	414	321	2.0
Pipedream	398	346	268	1.9

We also asked you to suggest other subjects you would like to hear about. We list them below. Where more than one person suggested it, a number is given.

310 upgrades (See page 24!!)	
Adrian Look (who?!)	
Adventures	
Amateur Radio	2
APL	
ARM 3	4
Artificial Intelligence	2
Applications	
Assembly language	10
Autosketch	
Back page viz Acorn Abuser	
Bulletin boards	
C	12
CAD / Art	17
Communications	12
Comparisons with Mac	
Competitions	2
Construction	50+
Database	3
DTP	50+
Econet	5
Education	20
Engineering	
Fortran	2
Fractals	
Games	9
Glossary	
Graphics	40
Hypertext	
Image processing	
Interfacing	2
Knitware	
Logistix	4
Logo	
Machine Code	
Maths	2
Multi-tasking	3
Networking	
Number crunching	
Pascal	2
Programming	4
Prolog	
R140	
RISC-OS	26
Science	
Shareware	3
Sound/Music	45
Spreadsheets	2
Sprites	
System Delta Plus	8
Teletext	
Transferring files	
Twin	
User Port	
Utilities	2
WIMPs	15
WW+	
Z88	2

I will say more next month when I have read through all your detailed comments. A

INVESTIGATOR 1.02

£24.95

THE SERIAL PORT

Investigator is a disc utility program which is compatible with the Archimedes 300, 400 and 3000 series using either the Risc OS or Arthur 1.2 operating systems. *Investigator* can perform the following operations on discs of many different formats:

- Examine the format of the disc in detail.
- Edit the data stored on the disc.
- Make backup copies of the disc.
- Store the entire disc as an ordinary ADFS file. This may allow archives of several master discs to be stored on a single backup disc. The disc may then be transmitted to a remote site using a modem and a communications package such as ARCterm.
- Fully WIMP front end.

The Serial Port, 12 Housman Road, Street, Somerset BA16 0SD
Voice (0458) 43549 Data (0458) 47608 (300–2400 baud)

Please send me ☐ INVESTIGATOR 1.02 at £24.95, cheque, PO enclosed.
☐ Data Sheet

Name _____

Address _____

_____

_____

Computerware

New Product Release

Archimedes A300 RAM Expansion Board.

In line with our continued commitment to the A300 user Computerware are proud to announce their new RAM expansion board. The dealer installable unit will allow the A300 to be expanded to 2 or 4Mb without the loss or relocation of the original on board RAM. The A300 can be expanded to 2Mb with our basic 1Mb board, (provided that the A300 already has its full complement of 1Mb RAM on board) and to the full 4Mb with our further 'plug in' 2Mb upgrade. Equally our expansion board can be supplied as the full version initially. The expansion unit is built to our usual high standards on a multi-layer board. ZIP RAM modules have been used to achieve the high density of packing required to allow the unit to be installed out of the way. Full compatibility with the ALEPH ONE ARM3 upgrade is maintained to give real power, at your fingertips.

The A300 RAM expansion board will be available shortly, orders are being treated as first come, first served.

Placing an order

Demand for the upgrade is very high but you can place your advance order now by sending a deposit of £25 to reserve a place in the queue. The Ram boards are 'plug-in' but still need to be installed by us due to the special tooling required. As such you will be required to send us your Archimedes when your place in the queue is reached.

A300 RAM 2Mb price £399 inc VAT

A300 RAM 4Mb price £699 inc VAT

Prices include installation and courier return of your Archimedes. Full details will be sent with notification of receipt of deposit. Further information available on request.

Hard disc drives

Computerware hard disc drives offer a fully Acorn compatible product manufactured to our high standards. Our drives are available for all the Archimedes computers, A300, A400 and A3000. A300 and A3000 versions are supplied with controller podule capable of accessing two drives, one internally and one externally through specially mounted connectors. All our drives come complete with all parts required to fully install the system, including cables, screws, metalwork etc. All our drives have an access time of less than 28ms and generate very little noise.

Hard drives for the A300

20Mb with podule £435 inc. VAT *
40Mb with podule £620 inc. VAT *

Hard drives for the A400

20Mb £229 inc. VAT
40Mb £435 inc. VAT
50Mb £574 inc. VAT
72Mb £1149 inc. VAT

Hard drives for the A3000

20Mb £459 inc. VAT
40Mb £649 inc. VAT

* *Backplane and fan required.*

Computerware 20Mb hard drives are fully autopark. Quality Seagate and NEC drives are supplied as standard with a 2 year warranty on 40Mb drives.

More New Products

Further products available from Computerware include the following;
A3000 1Mb RAM upgrade £159.85 inc. VAT
A3000 3Mb RAM upgrade TBA
A3000 Colour TV Modulator £29.95 inc. VAT
Archimedes external floppy disk buffer £24.95 inc. VAT

Watch this space for more new products

All Computerware products are covered by a 1 year guarantee.
Our prices include free overnight delivery nationwide.

Computerware Research Ltd.
Units 9/10/11
Livestock Market
Hall Road
Norwich
NR4 6DW

☎ 0603-507799

Upgrading the Archimedes A300's

Rob Brown

For customers of the original Archimedes A305 and A310 computers the advent of the new A400/1 series has, at a stroke, apparently rendered their computer as obsolete as the original BBC model A microcomputer was when compared with the model B – or so it seems. I have just upgraded my existing A310 and the following (hopefully non-technical) comments may be of interest to others contemplating the alternatives of buying new or upgrading existing equipment.

Alternative options available

Instead of purchasing a new computer, it is now possible to upgrade the A300 series to be functionally equivalent to the A400/1 series; these are the options:

• **Memory upgrade**. Previous advice to A305 owners to upgrade to 1 Mbyte of memory obviously still stands; but there are now a number of organisations advertising upgrades to either 2 or 4 Mbytes for the A300 series. Such an upgrade does not just consist of plugging in additional memory chips; a separate circuit board has to be fitted and professional fitting by a dealer may well be required.

• **MEMC 1a upgrade.** The new A400/1 series incorporate a newer (faster) memory controller but a similar upgrade is available for the A300 series.

• **Second (internal) floppy disc drive upgrade.** The prices of such an upgrade for both the A300 and A400 series are virtually identical but, if funds permit, a hard disc upgrade is a very much better option.

• **Hard disc upgrade.** Whilst the A400/1 series incorporates the hard disc controller circuitry on the main board, an additional expansion card (podule) is required for the A300 series – and, if not already fitted, a backplane and fan are also required. If an internal hard disc drive is to be fitted in either computer, it is not possible for a second internal floppy disc drive also to be fitted; but in any event it is desirable for this upgrade to make provision for the fitting of a second (external) hard disc drive.

Choice of dealer / supplier

It is obviously important to select a reliable and reputable dealer especially if you are entrusting them with your valuable equipment for modifications. It might be hoped that if the dealer has been trading for some time, they will still be around in the future – especially important if things were to go wrong.

My own choice of dealer was simple – I originally purchased my Archimedes from CJE Micros in Worthing nearly two years ago; they are not too far away from where I live; they have given good service previously and their prices are competitive.

Memory upgrade

CJE Micros' RAM expansion board enables the fitting of either 1 or 3 additional Mbytes of memory. With the former, it is possible to add a further 2 Mbytes at a later stage. This board was apparently first designed in June of this year and a prototype was shown on CJE's stand at the BBC Acorn User Show at the end of July. The first of the expansion boards started to be fitted by CJE in early September, but fitting is not currently a DIY job – and most certainly not one that I would wish to contemplate.

The expansion board is fitted upside down over the RAM area of the main circuit board. Nine of the existing RAM chips have to be un-soldered and re-socketed on the expansion board, which in turn then plugs securely into the 9 sockets left vacant on the main board. This should make it possible, if necessary, to remove the expansion board and reinstate the 9 memory chips on the main board. The RAM expansion board has been designed to be compatible with the forthcoming ARM3 upgrade and, not surprisingly, does not clash with CJE's own external floppy disc drive interface board.

The computer has to be left with CJE Micros for a few days as, both before and after fitting the RAM expansion board, the computer is run continuously for a series of tests to be carried out.

Once the board is fitted, its existence is transparent to the user and with CJE's '340' board (an additional 3 Mbytes fitted) the whole 4 Mbytes of

memory are available, with memory "pages" appearing as 32k rather than the 8k of the A310.

MEMC 1a upgrade

Acorn are now supplying separately the new memory controller chip, and their quoted price includes fitting by an approved service centre; it seemed to make sense for this upgrade to be undertaken at the same time. Interestingly, the first MEMC 1a fitted to my computer did not work at all and a replacement had to be obtained.

Although there has been previous correspondence in Archive about the relative merits of "benchmarks", I thought it might still be interesting to compare "before" and "after" performance and so I chose the benchmarks in the November issue of the BBC Acorn User. For the comparison I also included benchmarks with the BASIC module loaded from ROM into RAM to produce the following results:

(All timings in secs)	ROM	RAM	ROM	RAM
Benchmark	**MEMC**		**MEMC 1a**	
Integer Arithmetic	3.51	2.66	3.11	2.49
FP Arithmetic	3.40	2.49	3.01	2.34
Trigonometry	11.03	8.26	9.12	7.10
FOR/NEXT	4.33	3.40	3.71	3.12
REPEAT/UNTIL	29.52	22.70	25.93	21.10
WHILE/ENDWHILE	29.90	22.84	26.18	21.17
Recursive PROCs	64.89	49.82	57.76	46.79
Arrays	1.21	0.95	1.05	0.87
"Benchmaze"	255.8	198.6	222.5	182.3

Even without fitting the MEMC 1a upgrade, the above test programs showed a significant improvement by using BASIC in RAM rather than ROM of nearly 23%, with the MEMC 1a upgrade fitted the timing improvement over the original MEMC was some 13% (ROM-BASIC) and nearly 8% (RAM-BASIC). It would be interesting to compare the latter timings with those achieved on an A400 series computer!

Hard disc upgrade

CJE Micros currently stock Acorn's own 20 Mbyte hard disc and Computerware's 20 and 40 Mbyte hard discs. On a £ per Mbyte basis the choice was simple – the Computerware 40 Mbyte represented the best value for money, another plus point was that CJE's price included fitting.

Previous articles in Archive have shown how much faster hard disc drives are than floppy disc drives and, whilst I have not conducted my own timings, I can certainly agree with the fact that Computerware's 40 Mbyte drive seems very fast indeed. Furthermore there seems to be virtually no additional noise over and above that from the fan. A second external hard disc drive can be plugged in the back of the computer and this particular drive is apparently auto-parking – although CJE Micros still recommend *DISMOUNTing the hard disc before switching off the computer.

Cost Comparison

Perhaps the best overall comparison to make is to compare the cost of a new A410/1 fitted with 4 Mbytes of memory and a 40 Mbyte hard disc (less a "trade- in" allowance) against the equivalent cost of upgrading an A310 computer.

A410/1 (base)	1380	
3 Mbytes additional memory	360	
40 Mbyte hard disc	400	
	£2140	
less: allowance (A310 base)	400	(say)
	£1740	
3 Mbyte add-on memory board	600	
40 Mbyte hard disc	570	
Backplane (if not already fitted)	60	
MEMC 1a upgrade	80	
	£1310	

Most of the above prices are taken from the latest Archive price list. Acorn's equivalent price for the A440/1 (albeit including a 47 Mbyte hard disc) is over £700 more expensive at £2874! The allowance of £400 is based on a likely minimum trade-in, more would be realised on a private sale, but Beebug are currently advertising A310 'base' models at only £590 together with their own 3 month warranty. Also, the price of £1380 for the computer includes £100 worth of free software at Archive prices.

Interestingly a number of organisations are still advertising for sale new A310 computers at around £960, using the above upgrade calculations the total cost would come to £2270 – this compares with an equivalent upgraded A410/1 at £2140!

Of course the 'BBC' A3000 computer should not be overlooked in this comparison; although it has more limited memory (and other) expansion capabilities and a hard disc drive has to be fitted externally the equivalent price would be £1670 (including a total of 2 Mbytes of memory and a 45 Mbyte hard disc).

Conclusions

For owners of existing A305/310 computers, purchasing a new A400 series will provide a further 12 month guarantee, plus some other advantages (e.g. the hard disc circuitry does not take up one of the expansion slots and there is provision to attach a high resolution mono monitor. However, unless you are able to sell your existing A300 series computer for a very good price indeed, this is likely to cost you several hundred pounds more than achieving very similar functionality by upgrading your existing computer – basically, if you want improved capacity and performance, "you pay your money and you take your choice".

However, if you are just wishing to purchase a new Archimedes computer, and are likely to wish to upgrade it in the near future with additional memory and/or a hard disc, it would seem to make better sense to purchase an A410/1 (or even A3000) rather than an A310 computer. A

The Acorn Midi Interface

Philip Jones

Acorn Computers have recently nailed their colours to the mast by being the first computer manufacturer to join the Music Industries Association and one of their first contributions is a MIDI interface podule. MIDI (Musical Instrument Digital Interface) attempts to define the information exchange between musical instruments and processing units.

My interest is in the technical applications of MIDI – I have no desire to use a sequencer program for writing songs, so this brief look at the podule will be biased from that point of view.

The Acorn Podule provides 1 x IN, 1 x THRU and 2 x OUT sockets, although these two are parallel connected and do not provide two channels as some others do. However for most moderate setups, a single IN and OUT are all you really need. A 16k eprom provides the software support, which consists of 32 SWI calls, more of which later, but even the manual suggests that the main idea is for application programs to sit on top of this base level, providing the sophisticated user interface. Well let's hope so !!!

The first thing to do is plug the Podule in, connect the MIDI out socket to the MIDI in of a keyboard or one of the many voice generators now available, switch on, call up Maestro and load a tune. Examining the instrument definitions pane reveals a new MIDI column. When play is selected in Maestro, the music should be heard in all its glory from the keyboard. It would seem that minimal MIDI control is available but the fact that it is there at all is a credit to the author of Maestro. Unfortunately you can't enter data into Maestro from a MIDI keyboard but perhaps someone who knows the file format could write a simple program to log MIDI data and convert it, (we're back to applications again).

If we can't enter data into Maestro what can we do with the input? Well we can play the Archimedes sound system from the MIDI keyboard. This is very simple to do and requires just one SWI call "MIDI_Sound Enable",1 and a connection from the keyboard's MIDI out to the podule's MIDI in. The result is reasonable, allowing all 8 channels to be played. If your keyboard outputs program change codes then the Archimedes will respond to these by switching to the numbered instrument definition. The default sounds of the Archimedes are a bit limited but this is easily remedied with any of the numerous programs that have been published to add voices generators.

As an aside, I bought the EMR SoundSynth at the same time as my MIDI interface without expecting them to work together but to my surprise they did. I also had the Armadillo sound sampler which works with SoundSynth, so I found to my delight that I had a MIDI controlled sampler and sound synthesiser.

This gives a idea of how easy it is to use the Acorn MIDI software, but the main aim is to encourage application writers to get to work. I have seen many examples of applications for MIDI control varying from audio mixing to tape recorder transport control and although some may not be particularly interesting, there is a huge market for MIDI software, which is currently held in a stanglehold by the Atari ST computers, but they are, according to rumours, rapidly reaching the point where the processor can't handle any more work. Who better to take over the mantle of "the musician's computer" than the Archimedes?? *(See Archive 1.1 p26 for an interesting look at the potential as seen two years ago – where is the fulfilment of the prophecy? Ed.)*

The SWI calls mentioned earlier provide a very comprehensive set of control functions, TxNoteOn and TxNoteOff being the most obvious for playing notes on a remote keyboard. If MIDI data logging is required (sequencer programs) then RxByte and RxCommand are provided. Timing is an important part of a sequencer program and much of the hard work is done for the programmer because the data that is received can be time-stamped either by MIDI clocks or by the internal sound scheduler's beat counter. The interface can send or receive the MIDI timimg clocks and the other timing and control functions have a SWI call each. While most of the MIDI functions have a SWI call, any process can be produced using TxCommand and TxByte.

To summarise, the hardware of a MIDI interface is pretty standard and the Acorn unit doesn't disappoint. The mark of a good piece of hardware is when you can forget it's there and the Acorn unit soon disappears. The software is excellent and provides the groundwork for lots of MIDI applications, if only I had the time to write them. Anyone whose interest extends beyond just using a MIDI sequencer can do no better than to buy this offering from Acorn. A

Help!!!!

• **Epson GQ3500 Laser printer problems** – when using an external font, this printer will not print out any spaces between words. Has anybody else had this problem or know how to solve it? Contact Mr A. Johns at Garth High School, Lillshall Road, Morden, Surrey SM4 6DU or telephone: 01–648–4904.

• **MIDI** – Mr C.J.Bussey would like to know if it is possible to write a MIDI editor for his Roland MT32 – at present he is having problems with the SWI "MIDI_RxByte" call. Any comments should be sent to 17 Jervis Place, Helensburgh, Dunbartonshire, Strathclyde, Scotland.

• **NEC Multi-Sync II** – Mike Sollom of Abinger, Stream Lane, Nutbourne, Pulborough RH20 2HE would like to know if anyone has succeeded in setting up a NEC Multi-Sync II with an A310.

• **News Agency programs?** – Warren Pearson runs a News Agency and is looking for specialist programs to help him with this task. Does anyone know of any? Contact Warren at 78 Church Close, Grimstone, nr Kings Lynn, Norfolk or telephone 0485–600524.

• **!PrinterLJ** – Has anyone altered the !PrinterLJ RISC-OS printer driver to make use of the HP Deskjet Plus? Contact Mr K Hynes, 81a Anson Road, London N7 0AS.

• **Plotters** – Has anyone got a RISC-OS printer driver for !DRAW that will drive a Hewlett Packard plotter? Contact Peter King in Leatherhead on 0372–386537.

• **Strange fault on A310** – An A310 with RISC-OS work OK most of the time but if you try to load up !Draw or !Paint or one or two other applications it seems to hang up. In fact if you leave it for 20 minutes, the application loads and is usable. We've tried obvious things like doing a <delete> power-up to completely reset the machine but still it does the same thing! Anyone had anything similar? Any ideas anyone? Mike Ballard on 0493–665007.

Help offered

• **Archimedes Spreadsheet** – Colin Turnbull has written a spreadsheet for the Archimedes. For further details contact him at 13 Woodhall Terrace, Juniper Green, Edinburgh EH14 5BR. A

Timewatch – The Personal Organiser

Chris Furlong

TimeWatch is a multi-tasking time and task management system for the RISC-OS desktop. It installs itself on the iconbar as a task and will keep track of all your tasks and appointments for a year. This can be increased, a year at a time, until you run out of disc space.

Before it can be used properly, you need to prepare a diary file. This is done by clicking select on the Timewatch icon. This presents you with a standard RISC-OS save box.

To load a diary all the usual methods can be used, clicking on a diary file, dragging it to the icon etc, as in !edit or !paint.

When a diary is loaded, a window is displayed with a special control box at the top which tells you the current date and year. It has four icons in it which are explained later. Below this is a normal window split into four sections: Appointments, Tasks, Notes and Anniversaries/Birthdays. In each is listed your entries for that day.

To move around the diary you can either click on the appropriate boxes in the control box or use the perpetual calendar available on a menu option from the icon. Appointments are recorded to the nearest minute for the start time and the duration is also recorded – appointments cannot run into the next day. The program also tells you about overlapping appointments.

The Tasks section splits the tasks entered into three categories finished tasks, unfinished tasks and a to-do list. When a task is finished, clicking the box next to the date, marks it as finished.

The Anniversaries/Birthday section allows you enter important dates which Timewatch will keep from one year to the next, you should never forget a Birthday or your wedding anniversary again.

The Notes section is for the ideas that strike when you least expect, or for phone messages. The order in which the four sections appear can be changed by moving the title and can be switched off altogether by clicking on the appropriate icon in the control box. Detailed notes can be added at will to any entry in the diary and entries can be added and deleted at any point. Text can be dragged in from !Edit and Arthur 1.20 diary files can be loaded in but I could not test this as I never used the diary on Arthur but I am assured that it works.

It is possible to search the diary to find an entry by just giving a part of the entry. Categories to search, dates to search between are all user definable. It will also print sections of the diary and again, the user can specify dates and categories to print. You can also force Timewatch to print a day on a sheet. Since it is a RISC-OS task, it uses the printer driver installed.

As Timewatch allows the user to specify the name of the diary file, it should be possible for several people to use the same disc, space allowing. Each year in a diary file takes about 8K.

The version reviewed, 0.17, had a pre-release manual which was well written, has a good index and covers all of the product's facilities well.

If a computerised diary system is what you need: Timewatch should fill most, if not all, of your requirements. A

Pipedream Extended Dictionary

Gerald Fitton

If you have the PipeDream SpellChecker then you can create your own dictionaries containing special technical words such as "ogive" (a cumulative frequency graph used by statisticians) or "quintic" (a fifth power equation) or even "SpellChecker". The PipeDream SpellChecker will then check whether the word exists in your dictionary as well as the 94000+ word dictionary supplied by Colton. HJH Software have produced such a user dictionary which is 170 kbyte long and they have given it the filename 'UserDict'.

How do you use it?

Since "UserDict" is the default name of any user dictionary, it might be a good idea for you to rename

the HJH Software dictionary. From PipeDream's Spell menu select "Open User Dictionary" and type in the name of the dictionary you want to load. You can have up to five. Then, whenever you type in a word which is not in the main dictionary all the loaded user dictionaries will be checked. If the word is still not found, the "boing!" will sound and you know that you may have mistyped the word.

How big is it?

The version I received for review is 170 kbyte long. That compares with Colton's 231 kbyte which contains over 94,000 words so I reckon it contains a little under 70,000 words. *(But if 231k contains 94k words, they must have used compression techniques. Is the UserDict compressed? However, working from the number of 'f' words (see below) and comparing the number of pages in my dictionary with 'f' words compared with the total, 70,000 sounds about right. Ed.)*

How to evaluate it?

I decided that it was going to be too much to check all 70,000 words so I selected a sample. I did this by dumping to a file called "HJF" all the words from the HJH dictionary beginning with "f". Why "f"? I chose "f" by sticking a pin in a newspaper and it stuck in an "f"! (Not because Fitton begins with an "F"!) There are 3,483 words in the HJH dictionary beginning with "f". I then created for myself a new user dictionary called "NewF". I used the Colton dictionary to spell check the "HJF" file putting all the unknown words into the "NewF" dictionary. No! I didn't do it the hard way, I used a macro.

Of the 3,483 words in the HJH dictionary only 453 were unknown to the Colton dictionary. The ratio of new words to total words works out at about 13%. If this ratio is typical then instead of 170 kbyte the HJH dictionary could have been cut down to about 22 kbyte. This is not a trivial matter since it takes time to look through a large user dictionary (as well as Colton's) and it is generally quicker to "Lock" your user dictionaries into memory rather than have them on a disc. I don't like the thought of making PipeDream search through two dictionaries for every word I mistype.

New 'f' words...

To give you some idea of the flavour of the 453 new "f" words I then selected every eleventh one (another simple macro) and put them in another file. Here is a dump of those 44 words.

facilitators, faddist, falconers, fanaticize, far-outness, fascistic, fatly, fatiguingly, faunally, feeblest, fellated, fenestral, ferredoxins, fervidness, fibriccating, ficin, fiercer, filterability, fimbriation, fire-watching, firming, fisherwoman, fizzler, flamy, flambeing, flashtubes, fledgling, floridness, fluoresced, flyswatter, fondest, footslogged, forbiddingly, forehocks, formicary, forty-fives, foveal, fraenulum, freewoman, frioulities, frugivore, frustule, fulfillers, furcula

Colton's dictionary spells one of these words as fledgeling and not fledgling! My Collins and Fowler dictionaries (the old-fashioned type which use paper and also tell you the meanings) give these as alternative spellings. At school (a long time ago I'm afraid, so things may be different now) I was always told that in writing "45" I should write "forty five" and not "forty-five". Colton has "forty-five" but not "forty-fives" (nor has Colton got "fourty-one") – "forty-fives" are gramophone records which go round at 45 rpm.

In Conclusion

In spite of getting a "boing!" every time I type in a date such as 7th September 1989, I have resisted adding "th" to my own user dictionary because, if I did so, then the spelling checker would not pick up a "the" mistyped as "th". A SpellChecker will not tell you whether to use "chose" or "choose", nor will it tell you the context in which to use "dependant" or "dependent". In spite of these limitations I find a spellchecker useful, particularly to decide whether a word should be hyphenated and to pick up mistyped words. My main complaint about the HJH dictionary is that, amongst its 70,000 words, it is probable that 61,000 of them are words which are in the Colton dictionary. I shall run a suitable macro and select the new words which are not in Colton's dictionary: only then shall I add the 9,000 or so new words from the HJH dictionary to my user dictionaries. By the way, neither "Ogive" nor "Quintic" are in the HJH dictionary – but they are in my own user dictionary.

The PipeDream User Dictionary is available through Archive at £6.50. A

Designed, & typeset

Impression is more than a word processor. It can handle all aspects of the final printed result - the text, line graphics, photographs, company logos etc. Yet it can still be used to bash out a single page of text as well as any 'simple' word processor. It is a document processor.

RISCOS

Impression is one of the first products to take full advantage of the new multi-tasking WIMP based operating system for the Archimedes, so it is simple and intuitive to use - long gone are the days when users had to remember commands, or codes for each operation. Only five main menu options control everything within Impression.

The program is written in ARM assembler so it is very fast and very responsive, and uses the minimum possible RAM space.

Frames

Impression is a frame based page layout system. All objects on the page are held within frames which may be positioned freely anywhere on the page. Frames can contain text or graphics, they may overlap, and may be transparent or have any coloured background. They can have a variety of borders displayed around them and may be arranged in columns to create multi-columned text.

Text frames may be linked to other text frames (even on subsequent pages) so text will automatically flow from frame to frame and page to page. Since Impression has been designed primarily as a word processor, it is important that users can enter text unhindered. Therefore frames and pages are created automatically as text flows out of a frame, so that while text is being entered you do not have to worry about creating new frames or pages.

Graphics frames may contain any sprite (for example images from Scan-Light) or any Draw file. All graphic frames may have the picture scaled within the frame to any degree. In addition the aspect ratio of pictures can be controlled and even locked to any required value.

Windows

Impression can handle up to 16 documents in memory at any one time, each being viewed in one or more windows. Each individual view may be scaled as required so that, for example, one view may be at 100% while another window shows the same document scaled to 20% so showing a live 'mini' view or multiple page 'thumb-nail' views. This mechanism also allows two different parts of a document to be edited without the need to scroll between them. Impression can display its pages within the window as side-by-side left/right pages, and as vertically arranged pages in a more word processor-like fashion. There is no need to specifically turn over the page, thereby overcoming a limitation of traditional DTP systems.

Spelling checker

Included with Impression is a 60,000 word spelling checker providing some of the most advanced spelling facilities. Check-as-you-type, user dictionaries, ignore dictionary, crossword and anagram solving and an intelligent 'guess' feature are included. Other related dictionaries control automatic abbreviation expansion as you type, and a hyphenation exception dictionary for precise hyphenation control over and above the normal automatic hyphenation.

arranged on

Styles

Like the most powerful word processors on the Mac, Impression supports a system of styles. Rather than having fixed text effects such as bold, underline etc, Impression allows the user to apply any user named style to any part of the text. This style may be defined and re-defined at any time to represent any combination of stylistic effects. So for example one style, perhaps called 'heading', may specify text to be in a Times font, one inch high, in italics and centered. This style may then be applied to any region of text with one key-press.

Printing

Included are the latest RISCOS printer drivers for Epson compatible 9 and 24 pin printers, and LaserJet compatible laser, ink-jet, and PostScript printers. These printer drivers ensure the output is to the maximum resolution the printer can manage. Impression also supports 'text mode' draft printing so text may be output as fast as possible using the printer's character set. The user therefore has a choice between fast, text only printing or high quality text (any font, any size) and graphics printing.

Impression comes with a 'no quibble' money back guarantee when purchased direct from Computer Concepts.

This advert was designed, entered, laid out and edited on Impression. All logos were created in Draw and imported into Impression frames. The pages were then 'printed' via the PostScript printer drivers to disc. This disc file was then sent directly to a Linotron photo-typesetter, which output the final camera ready artwork. The studio photographs were then pasted over scanned versions.

Other features:

- Master pages for consistent document design.
- All measurements may be specified in inches, mm, cm, points, picas, all to an accuracy of 1/72000ths inch.
- Ideal for a 1Mbyte machine - over 300K free memory!
- Fast automatic disc spooling of documents larger than memory, allowing virtually unlimited document size.
- Print multiple pages per sheet, any scale and rotated.
- Includes Acorn's new outline font system and fonts.
- Fast graphic scale and PostScript graphics printing.
- Automatic index generation.
- The package includes a 200 page manual (produced entirely with Impression), with tutorial, introduction and reference sections. Four discs include Impression, the printer drivers, the outline font manager and fonts, example document, Line-art examples, utility programs etc. An independently produced guide book to typography and page design is also included.

£149.00 +VAT (£171.35 inc)

A more detailed brochure is available from:

Computer Concepts Ltd

Gaddesden Place, Hemel Hempstead, Herts HP2 6EX. (0442) 63933

PC Show Report

Adrian Look

As promised last month, Adrian has given us here a fuller account of what there was to be seen for the Archimedes market at the PC Show.

This year, the Acorn stand was sandwiched between Commodore and Atari. Therefore, the choice of a 'castle theme' for the Acorn stand seemed somewhat appropriate. In any event, the theme proved to be effective as the Acorn Castle with its surrounding third party village provided much of interest to the prospective Archimedes owner.

Inside the Castle, Acorn were exhibiting their A3000, A410/1 and Unix R140 machines. These machines were demonstrating various packages e.g. DTP, FWPlus, PipeDream, Interdictor, etc and were accompanied by lots of Acorn staff who were willing and eager to answer any questions – so long as the questions weren't too hard! There were also some more formal demonstrations and seminars illustrating the power of Archimedes and the packages it can run (c.f. Archive 3.1 pp38-39).

It was obvious from the whole set-up that Acorn's publicity agents had been doing their job – to the extent that a new series of publicity material was available. It consisted of lots of colourful leaflets about the Archimedes range and a 90 page edition of the 'Acorn Computing' magazine providing a comprehensive list of the Archimedes' third parties and their products. If you want to get hold of the new Acorn publicity material, you should contact your nearest Acorn dealer.

RISC-OS comes of age

There were many sophisticated software and hardware packages being exhibited at the show, and what was most striking about them was that they were all RISC-OS compatible and at least 50–60% of them could be classed as RISCWARE i.e. implemented under the RISC-OS application author's guidelines, as suggested by Acorn, in order to enhance the use of the Archimedes' desktop environment.

For example, several small RISC-OS applications that have been designed to increase the functionality of the desktop are beginning to emerge. Not only are these applications available from independent software vendors (ISV's) but some useful Public Domain programs are also available.

The Data Store were selling a disc full of such utilities (£14.95 inc VAT). It includes applications that: allow access to the ARM Basic Editor from the desktop, control of the VIDC to produce new RISC-OS modes for both ordinary and multisync monitors, provide 26 *-commands of your own choice, provide a file incinerator, supply facilities for loading and running a series of applications and files, provide a desktop ROM filer for the CC podule, provide Z88 file transfer, will open application directories without the need to press the <shift> key, and a small application call !Drunk to amuse you.

Software Solutions (who were not formally exhibiting at the show) also market a disc of RISC-OS utilities (£49.95 ex VAT). It has been available for some months now and includes applications that provide: a dustbin to delete your files, an RS423 terminal, star commands without the need to press <f12>, the ability to set more *Copy and *Wipe options, the ability to set filetypes, desktop start up sequences, a note pad, word processor file conversion for View, First Word Plus, Wordwise and !Edit, and a PD ray tracing package.

Recently, they have also released three RISC-WARE utilities for Econet. 'The Disc Sharer' (£137.50 ex VAT) allows users of BBC Micros to access the hard disc of an Archimedes across Econet without tying up the Archimedes with the hard disc. 'The Printer Spooler' (£81.25 ex VAT) accepts files (for printing) from up to 24 Econet stations and so overcomes the limitation of Econet printer servers that can only accept files from one station at a time. 'Remote Logon' (£38 ex VAT) is an application designed for users who need to access their Archimedes floppy or hard disc from another Econet machine whilst retaining full ownership of all the files and directories. You should note that educational discount can be obtained on all three of the above items.

Acorn also released a RISC-OS 'utilities' disc at the PC Show. It is called the RISC-OS Extras disc and contains: several update modules, a few fixes, the latest printer drivers and a new version of the !65Host application. The disc can be obtained from your nearest Acorn dealer or from us as Shareware Disc 17 (See Archive 3.1 p39 for further details).

Archie the Music Maker

There are now several applications dedicated to making the Archimedes 'sing'. For example, EMR, who were at the show, have released a whole host of packages (as listed in Archive 3.1 p39). Unfortunately, when I visited their stand, Mike Beecher was not there to comment on his latest developments. However, I did see several other exciting bits and pieces:

Armadillo were showing off their A616 (£1295 ex VAT), 16 bit sound sampler board and the HighNote software that comes with it. The HighNote software has been designed for RISC-OS but it does not run under the desktop environment. Instead, it provides its own environment which has 'been designed for people who don't want to have to understand a computer'. To my mind, the most impressive feature of this system is its ability to mark, move and copy sections of a sample at will and on both of the stereo channels.

Sharing stand number 2 with Armadillo was a company called Pandora Technology, who are new to the Archimedes scene. They were demonstrating a pre-release version of their professional MIDI sequencing software called !Inspiration. The software works completely in the RISC-OS desktop environment being able to 'multi-task more real time functions with greater accuracy than any other system'. It provides full MIDI filtering and patching facilities and consists of up to 99 groups of tracks called reels, each of which may have up to MIDI 256 tracks.

Pandora are also producing a MIDI interface to accompany !Inspiration. It will provide 4 x 16 channels with support for timecode, allowing the Archimedes to access a maximum of 256 discrete MIDI channels.

The software will cost £399 inc VAT and is awaiting Acorn's approval, so it should be available within the next three or four weeks. Availability and price of the hardware is not yet known.

Clares' Armadeus sound sampling software and hardware were also on show. The software (£79.95 inc VAT) has been implemented as a full RISC-OS multi-tasking application (i.e. it is a RISCWARE application) and offers variable sample rates and buffer sizes with the ability to edit the sound sample graphically by cutting, pasting, fading, filtering, echoing, scaling, etc and by hand-drawing the wave form. New samples can be appended, inserted or overlaid onto an existing sample and more than one sample can be held in the memory allowing a song sequence to be composed from them. As the sound is being played, it can be displayed graphically, either as a 128 point spectrum analysis or as an image of the sound's wave form. The Armadeus software can be used with either Clare's own board or the Armadillo A448, A448 (m), and Wildvision ADC 1208 with Unilab interface.

The Armadeus sound sampler board (£149 inc VAT) consists of 8-bit AtoD and 8-bit DtoA circuitry, allowing you to sample and replay through either a 0.25" mike socket or phono. The board offers: 64 levels of software selectable input gain, the ability to sample and hold with an 8µS conversion time, and a variable sample rate of up to 76 kHz.

Games Galore

Clares were also showing off their new flight simulation game called Interdictor (£34.95 inc VAT). The long awaited simulation game has been distributed to almost every corner of Acorn Computer Ltd and has brought the company to all but a stand still – or so Dave Clare says! The package has not been copy protected but it does come with a colour chart from which you are expected to read off two colours when the game is first loaded. This seems a very sensible solution as users can backup the floppy or install the game on to their hard disc. Meanwhile software pirates will still be deterred – well, at least as much as would any other copy protection technique! (See the review on page 40 for further details)

The Fourth Dimension (also known as Impact Software) were demonstrating a pre-release version of their latest Archimedes game called E-Type (£19.95 inc VAT), which should be generally

available by the time you read this. (See the review on page 49.)

The Fourth Dimension and Impact Software are planning to release several other packages before Christmas: E-Type Designer (£16.95 inc VAT) should be available by the third week of October. (We have already received a review copy but haven't had a chance to try it out.) As the name suggests, you can design your own tracks i.e. the course of the road, the objects on and off the track and the background images. Holed Out Designer (£19.95 inc VAT) will be available round about the 1st week of November. Again, as its rather original name suggests, it will allow you to design your own golf courses e.g. where the water, greens, woods, etc go. U.I.M. (£29.95 inc VAT), an existing 3D adventure game for the BBC, will be converted to the Archimedes and improved. It should be available during the first week of December.

Unfortunately, I don't presently have any information on next two titles: Arcade Soccer and The Olympics (both £19.95 inc VAT) except that they should be available in the last week of November and the first week of December, respectively. However, their titles seem fairly self explanatory. If the standard of these games matches that of Holed Out and more particularly E-Type then Archimedes games players should be in for a real treat this Christmas!

NYPDTP – Not Yet Published DTP

The Archimedes market has been promised several desktop publishing packages from a variety companies but to date Acorn is the only company that can actually supply a DTP program which even begins to harness the power of the Archimedes.

Computer Concepts have been advertising their document processor called Impression for several months now. They have even been demonstrating pre-release versions at various computer shows (including this one). However, it seems that they have been trying to produce a DTP that is all things to all men and have discovered that it is taking them rather longer than they had anticipated.

At present, they seem to be suffering from a well known developer's hang-up called creeping featurism – or at least a variation on this theme. Inside Gaddesden Place there is a list of all of the features that Computer Concepts would like to see in an Archimedes DTP package. They have realised that they cannot include all of these features in version one of Impressions without losing out to the competition, so they also plan to release a second version in approximately a year's time. However, the dividing line between version one and version two keeps sliding back and so does the release date.

Another DTP package that could be seen at the PC Show was Clares' Tempest (£129.95 inc VAT). David Coathupe (who is a freelance programmer) is developing the package for Clares and was kind enough to demonstrate a pre-release version of his work to me.

Tempest is based on the Acorn DTP package but hopes redress some of the deficiencies of the Acorn package and to include some of the features that Acorn DTP owners are beginning to demand. Some of the distinguishing features of the package are: multi-column frames, text flow around regular shapes, fast anti-aliased text editing, memory management facilities, and it only uses 128k of memory. At present, the package is being re-coded to optimise the speed of the display routines, so availability has not yet be determined.

Beebug were at the show, but their was no sign of their DTP, or any other products come to think of it.

Computer Aided Design

Another area in which the Archimedes has potential is computer aided design. This was reflected at the show as there were at least three companies exhibiting professional design software. Oak were demonstrating their professional design software called the Parametric Design Tool (£359 ex VAT). It did look rather impressive – mind you, it was being run on Oak's own 20" multisync monitors. (£1495 ex VAT or £1560 from Archive if anyone wants one.) They have now sold over 200 copies so it must have some merits!

Linear Graphics Ltd (the people who supply plotters) were demonstrating their 2D computer design tool called LinCAD (£150). The company has a Director of Educational Services, Peter Lymer, who gave one of the seminars in the Acorn Theatre.

Cadsoft Systems (Calancraft) are having two Apple Mac packages converted to the Archimedes – by a company in Canada no less. Both are concerned with the design of digital circuitry but are aimed at different markets. LogicWorks is aimed at education and will cost around about £150, whereas DesignWorks is aimed at professionals and will cost about £685.

More SCSI Media

One of the latest fashions for the Archimedes has been SCSI hard disc drives. Lingenuity, who have had production problems, have finally got their act together and were demonstrating their SCSI card at the show. Further more, Lingenuity have developed and internal card for the A3000 will allow access to hard drives, and eventually CD-ROMs and tape streamers.

The other supplier of SCSI cards, Oak Computers, announced at the show that they will be expanding their range of SCSI media to include tape streamers. They plan to release two sizes of tape streamer 60Mb and 150Mb. The bad news is that they won't be cheap.

More RISCWARE

Glimpses of three new RISCWARE products could be seen at the show. The first was Genesis, a hyper card based system. The package is being developed by Software Solutions in association with Hampshire LEA. You can link pages of Archimedes-based information in a free format e.g. text, draw files, sprites, animation (mogul), etc. This application could be a powerful teaching aid if properly utilised. The second was a multi-tasking version of First Word Plus (see page 43) for further details. The third was Artisan II from Clares. This package was being demonstrated by Dave Clare in the Acorn Theatre. It offers a combination of Arti-san and ProArtisan features and provides some of its own e.g. grid lock, air brush, sits on the desktop iconbar and more.

Irlam Instruments were at the show demonstrating their document scanner called iScan (£679 ex VAT). The hardware offers precision friction feed, scanning sizes up to A4 width, 200 dots per inch, true 16-grey scales, output as either sprites or industry standard TIFF image files and full RISCWARE application software.

Even More

There were many more products and stands than I could manage to investigate during my half day at the show e.g. Presenter II and Presenter Story from Lingenuity, Euclid II and Mogul, PipeDream 3, Silicon Vision, Dabs Press, Brainsoft, Video Electronics, etc. However, I hope that my brief account of the what I saw shows you that the Archimedes and, more particularly, third party software is alive and most definitely kicking.

P.S. Those who read Bruce Smith's review of the PC Show in A & B Computing may wonder if he went to the same show, but I can assure you he did! A

Small Ad's

• **A310 + RISC-OS** entry system with 4 slot backplane, 5.25" drive interface, fan and VEL high quality composite (encoded RGB) video output. Includes all manuals and First Word Plus, Render Bender and ProArtisan. All for £950. Contact Marc Caplan at 3 Park Cottages, Green Lane, Stanmore, Middlesex HA7 3AF or telephone 01–954–6367.

• **Archimedes A310 colour** with RISC-OS, 2nd 3.5" drive, 2 slot backplane, I/O podule, CC ROM podule and battery back up with 32k RAM, Artisan, Toolkit, Arcwriter, Control Panel, Enthar 7, Corruption, Terramex, Missile Control, Jet Fighter, Orion, Alerion, Overload, Arcade 3. Worth £1896.15 will sell for £1100 o.n.o. Phone Iain on 0925–66889.

• **Get C release 3 at a discount!** Buy an immaculate condition C release 2 with unused registration card for £75 o.n.o. so you can upgrade. Telephone Mr Corderoy on 0903–20043.

• **First Word Plus** (as new) £45, System Delta Plus (as new) £45, Disc buffer 5.25/3.5" (Watford) £10. Phone Ken on 0202–532216.

• **Philips CM8833 colour monitor** £150. Computer Concepts Rom Podule (unused) £35. Epson MX82FT printer/ribbons £65. Akhter twin 5.25" disk drives cased/PSU £85. Telephone Paul on 0293–515201 – evenings preferred.

• **RISC-OS Programmers Reference Manuals** for sale £75 (bought one set, given another). Games for sale: Fish £10, Pacmania £10, Quazer £4. Wanted: ANSI C Compiler release 1 or 2 for cash (or above software + cash). Contact Onkar on 01–725–8643.

• **Volumes one and two of Archive**, both bound (vol. one is bound in blue leather). Will exchange them for two boxes of ten quality 5.25" HD discs (1.2M). Contact Zoran Brkic, Bulevar Jna 80/74, 11000 Beograd, Yogoslavia. A

Pipeline

Gerald Fitton

Firstly let me thank all the people who have written to me either through Archive or directly. There have been so many that it is going to be almost impossible to write to you all individually. Perhaps after the first few months the flow will die down a little – I'm not complaining you understand, just asking you to be a little patient if your particular piece isn't in this month's offerings.

Some of you have written just to give encouragement. Thank you. Others have written in with suggestions for applications. For example, Geoff Gibson has written in with the makings of a banking application of PipeDream's spreadsheet. These applications will take a little time to sort out and Paul's deadline for copy is approaching all too quickly! However, if you have a working, or nearly working application with an example that you can put on disc, please send it to me c/o the Abacus Training address in the FactFile.

There are two problems which have come up in many of the letters I have received and I shall try to deal with them this month. These are column layout and printer drivers.

Column Layout

When you boot up PipeDream for the first time you will find 6 columns each 12 characters wide giving 72 characters across the screen. The little vertical arrow which determines where the "wrap around" occurs is at the right hand end of the screen. If you change this column structure and then save the new structure as an initialisation file then this will become the new default column structure.

If you click on the menu button over the PipeDream icon (version 3) or use "New window" from the "Files" menu (or select "New" from earlier versions of PipeDream) then you will bring up a window with this new default structure. Any files of any type (including PipeDream format files) which are "dragged" into this window will be forced into the new default column structure. This is so that you can take parts of one file (for example, a marked block from another window) and load them into your working document without losing your current structure.

On the other hand, if you double click on a PipeDream format file (or drag it over the PipeDream icon), a new window will open containing the contents of the file and it will have the structure which was saved with it. If you want half a dozen different column structures for say letters, databases, invoice forms, ledger accounts, etc then save an empty file of each type (in PipeDream format – note that Tab format files do not contain a column structure) and double click on it to load that column structure. You can then change the name of the file (by saving it under a new name) and go on from there.

Once you have a window with your preferred column structure you can then drag into it Tab files (which have the !Edit icon) or other PipeDream files. All will take on the column structure of the file in the existing window.

One writer has asked what can be done to rectify the problem which arises if you press <return> before the end of a line. Generally, with all word processors, you should press <return> only at the end of a paragraph or on those few occasions when you want to force a new line. What you are supposed do is just keep typing away and the words will "wrap around" automatically at the end of a line: to be more accurate, the "wrap around" takes place where the little downward pointing arrow at the top indicates the end of a line. The position of this arrow can be adjusted either with the "move margin left" (<shift-f9> – this affects all columns) or with the "set right margin" (<ctrl-H> in version 3 – <Alt-H> in earlier versions – one column only) command.

If you have pressed <return> by mistake then unless there is a space at the beginning of the next line or if you have pressed <Tab> and so moved into the next column by mistake, you will find that moving the cursor back to the beginning of the paragraph and using "Format Paragraph" does reformat the paragraph. "Join Lines" (<Ctrl-F8>) joins up the lines even if you have blank lines or blank spaces on the next line, however, this technique usually needs to be followed by a "Reformat".

The "centre align" command will work only if there is some text to centre. You can't put the text in after invoking the command.

Printer Drivers

This is a big subject and it looks as if we shall have to spend some time on this in future issues. My major tip is that you should remove the ESC "@" from the "Printer On" string if you want to retain any settings which you have made at the printer itself. The ESC "@" resets the printer to its default setting and so loses all the manual settings such as condensed print. Readers' pleas for help include a printer driver for the colour Star LC 10 and other machines such as the HP Laserjet. If you have a PipeDream printer driver that you can send me on disc I will get Paul to include it in the next monthly disc.

Off at CR? If you can't make this work then check to see that you have used <Tab> to get into the correct column before typing Y or N.

One reader points out that if you set a column width to zero as a temporary measure then that column will be suppressed and not printed out – thanks. This is particularly useful for hiding unwanted spreadsheet calculations.

Both Stuart Oglesby and I would like to know how to print out text which is justified (both left and right) to two different widths but starting at the same left position? I can do this with unjustified text but I don't seem to do better than Stuart (1 blank space to the left of one of the blocks) with both margins justified.

Can you help?

- How can the colour of the caret be changed?
- How do you make the mouse less sensitive?
- How do you change mode (e.g. to a 132 character width) from within Pipedream without losing your document?
- What is the best way of printing (address) labels?
- Has anyone a macro for finding the number of days difference between two dates?
- Can the keyboard (etc) be set to use the French character set?
- What is the "best" setup on a limited memory (e.g. 310) machine? One reader sends in the tip – use mode 0 if you can – put your !Fonts in the Rompod if you have one! A

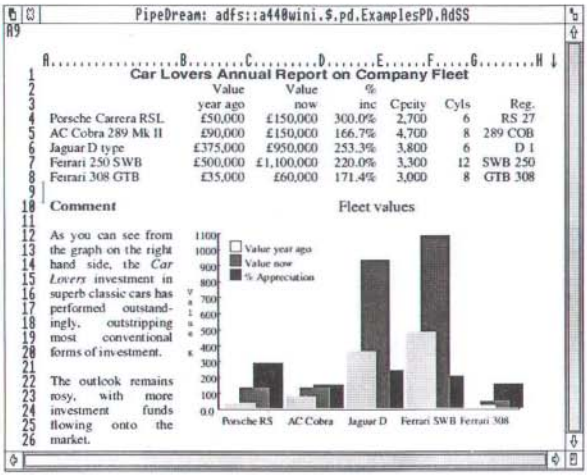
Credit where it's due

• **Minerva Systems** sent us a copy of a letter which they sent to a Mr Oats. He wrote to them saying that he was unable to play the Hoverbod game that he had just purchased. In their reply, Minerva confirmed that the game does not work properly. They have attempted to correct the fault but they have had problems with the programmer (who now works for Clares). They continued by saying that they have taken measures to put pressure on the programmer. For the meantime, they sent Mr Oats a complimentary copy of their Thundermonk game.

• **Computer Concepts** – RISC-OS upgrades of the Archimedes ROM versions of Inter-Chart, Inter-Sheet, Inter-Word and SpellMaster are now available from Computer Concepts, the RISC-OS 'Inter' series now utilise the 65Tube emulator (not as previously 65Arthur). Having established that these were available I was pleasantly surprised to find that Computer Concepts are providing these upgrades free of charge – all they require is the return of the original ROM. There is also available on disc from Computer Concepts a module called RFSMOD which allows access to the ROM filing system, in a similar manner to the RAM filing system and ADFS, from the RISC-OS desktop. This costs a modest £4 and is apparently included free in current versions of their ROM/RAM podule.

• **Dabs Press** have had several praises from Archive subscribers for their friendly and efficient services. Mr Lee would like to thank them for their quick despatch of a RISC-OS upgrade for Alerion to Hong Kong and Mr Bisset would like to thank them for their prompt service when ordering his A3000. A

PIPEDREAM 3



PipeDream 3 breaks down the barriers between word processor, spreadsheet and database. You can include numerical tables in your letters and reports, add paragraphs to your spreadsheets, and perform calculations within your databases.

Based on PipeDream 2, the best-selling integrated package for the Archimedes, PipeDream 3 has been completely re-written to take full advantage of RISC OS - if you can use RISC OS, you can use PipeDream 3. It is fully multi-tasking and multi-windowing, so you can work on many documents at once and instantly move information between them. And since PipeDream 3 can automatically load and save most popular file formats, including VIEW and First Word Plus, switching to it from other programs has never been easier.

Power, flexibility, speed, ease of use. PipeDream 3. Breaking down the barriers.

For a free brochure, see your Archimedes dealer, or phone us on 0954 211472 or return the coupon.

PipeDream 3 is for all Archimedes computers with RISC OS and 1Mbyte of RAM.

PipeDream 3 costs £147.00 +VAT.

Major features include:

- many documents loaded at once
- intuitive RISC OS user interface
- displaying and printing of pictures within text
- built-in 93,003 word spelling checker
- file compatibility with PC & Z88 PipeDream and BBC View Professional
- background recalculation
- keystroke compatibility with Z88 & PC PipeDream
- Z88 filing system
- automatic loading of VIEW, ViewSheet, Lotus, First Word Plus, Tab and CSV files
- automatic saving of VIEW, Lotus, Acorn DTP format, Tab and CSV files
- multi-field sorting
- use of all available fonts
- 62 spreadsheet functions
- external references for 3-D modelling
- macro file recorder
- slot protection

For a free brochure, complete and return this coupon
PipeDream 3 ☐ View Professional ☐
Name _____
Address _____
_____
_____
_____ Post code _____

Colton Software, Broadway House,149-151 St. Neots Road, Hardwick, Cambridge CB3 7QJ, England.
Fax: 0954 211607 Tel: 0954 211472

All trademarks acknowledged. The chart in the screen shown above was produced by sending numbers from PipeDream 3 to Lingenuity's Presenter 2 and then loading the resulting graph back into PipeDream 3.

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MS-DOS Column

John Eden

This month we will take look at 'batch files' and their uses. Batch files can be used for a variety of tasks, but their chief use is to automate frequently performed jobs. Using this technique you can tailor the system to suit you, and simplify tasks which may otherwise require several individual commands to complete.

Batch files have their origins in the dim and distant past, when most computer work was done by submitting large piles of punch cards to the data-processing department. The cards had to contain all the instructions necessary to enable the machine to run the job successfully since live input or interaction with the system was not possible. The data-processing staff would run these 'jobs' in 'batches' and deliver the resulting output days, or sometimes even weeks, later!!

MS-DOS batch files

In MS-DOS, a batch file is a simple plain text file containing DOS commands. As with the punch card example, the file must contain all the commands required to perform the task for which it was written. The Archimedes native mode equivalent of a batch file is the obey file, since this type of file remains open even after an application has been started. When the application is terminated, the batch file resumes at the instruction after the one which started it, just as the obey file does.

All batch files in DOS must have the extension .bat so that DOS can recognise them as batch files. Care should be taken when naming your batch file, to avoid names used by internal or external DOS commands. To start a batch file just type its name at the system prompt, but without the extension. When something is typed at the system prompt, DOS looks for a match in its internal commands. If it finds a match it carries out the command, if not it checks its external commands and executable files. Finally, if no match is found, it checks the batch files (files with extension .bat). This explains why a command will be carried out in preference to a batch file with the same name.

In addition to the usual DOS commands, there are several batch specific commands that can be included in a batch file. These allow for parameter substitution and manipulation as well as the more usual conditional tests and jumps and for printing to the screen.

The Autoexec batch file

There is one batch file which has special significance to DOS, the autoexec.bat file. The purpose of this file is to enable you to tailor the system the way you want it. When you boot DOS, it looks for this file, and if it exists, control is passed to it immediately. One side effect of this is that DOS no longer stops to ask you for the date and time.

There are several methods you can use to create a batch file, the simplest and least flexible of which is copying from the console. The best method is to use a word processor in plain ASCII mode, since this will allow free movement and editing within the file. Although it is a bit of a pain to use, 'Edlin' the line editor is a good standby. This is supplied with DOS, so everyone should have a copy and it is worth familiarising yourself with its basic operations.

If you have a lot of batch files you should consider putting them in a directory of their own. Not only will this tidy up your directories, but if you include the directory name in the 'path' command, you will be able to access your batch files from anywhere in the directory structure.

A useful batch file

Here is an example of a batch file which I hope you will find useful. The purpose of LOCATE.BAT is to display the path and filename of any files which contain the string given. This should help you locate files you may have lost in your directory structure. The command can be used with floppy discs, but is more useful for hard disc users. The syntax of the command is:-

```
locate STRING new
```

Typing locate on its own will give help information. STRING should be in upper case. new is optional and if entered will cause the file of filenames to be updated. The command works by sending the output of a verbose chkdsk command to a file called filename.dat in the root directory. The DOS 'find' command is used to check and display any lines in

this file which contain the search string. Since the output of chkdsk is in upper case, you should enter your search string in upper case. If you add any files to your disc you should include the optional 'new' parameter to ensure that 'filename.dat' is up to date.

```
echo off
cls
echo Esc[m
if not "%1"=="" goto :START
:HELP
echo Esc[m
echo Esc[1mCommand ResultEsc[m
echo Esc[m
echo locate Displays this help
    information
echo Esc[m
echo locate STRING Searches for
    file names containing STRING.
echo The STRING should be entered
    in upper case.
echo Esc[m
echo locate STRING new Updates the
    file of file names and then
echo searches for file names
    containing STRING.
goto END
:START
if "%2"=="new" goto UPDATE
if not "%2"=="" goto HELP
if exist \filename.dat goto SEARCH
:UPDATE
echo Esc[1mUpdating file names ...
    Please wait.Esc[m
chkdsk /v > \filename.dat
:SEARCH
find "%1" \filename.dat
more
:END
```

You should name the file 'locate.bat'. Where you see Esc in the listing, you should enter the escape code. If you create the file using 'EDLIN' don't forget that to enter an escape code you should use control V followed by a square bracket.

The logic of the batch file should be quite easy to follow.

If 'locate' is entered with no parameters then :HELP is executed and you are returned to the DOS prompt.

If you entered a parameter, execution jumps to :START and the value of the second parameter is checked. If it is 'new' execution jumps to :UPDATE. If anything other than 'new' was entered then :HELP is executed.

If you did not enter a second parameter, the batch file checks for the existence of 'filename.dat' in the root directory. If this exists then execution jumps to :SEARCH otherwise it continues at :UPDATE.

:UPDATE performs a verbose chkdsk command and the output of this is redirected to a data file called 'filename.dat' in the root directory.

Finally :SEARCH uses the DOS 'find' command to search through 'filename.dat' for any matches of the STRING you gave. The command is piped through the 'more' filter so that output doesn't run away with you if there is more than a screen full.

That's it for this month. Please let me know of any software you are using successfully with the emulator, so that I can compile the new compatibility lists. The address as always is: John Eden, 13 Cranleigh Gardens, Luton, Beds. LU3 1LS (no phone calls please!). Or if you prefer, you can write to me care of Archive. A

Interdictor – Flight Simulator

Richard House

At last a flight simulator for the Archimedes! Interdictor, from Clares Micro Supplies, comes on one disc with a 43 page, indexed manual. The disc is almost full but the actual flight program is 174K of code, most of which was compiled from C (so I am led to believe). Many of the remaining files are sprites and sound modules.

Pre-flight checks

A 1 Mbyte machine is needed to run Interdictor. The manual sensibly advises the creation of a working copy of the disc which is easily done as there is no copy protection on the disc. However, to deter piracy, you do need reference to the manual to start the program each time, as it asks you to give the colours of two randomly chosen squares on a coloured matrix printed at the back of the manual.

The disc is most easily run from the desktop but, before going straight to the holding point, it is worth running the sound demo for recognition of the sounds you may hear in the cockpit.

Selecting the !Interdictor icon boots the simulator and puts you at the start of the runway, in the seat of a jet fighter. The flight controls work from the mouse and keyboard. The mouse movements control the elevators and ailerons with the buttons providing engine rev control and weapon firing. The mouse provides reasonable control but the Voltmace Delta-Cat joystick can be used to provide a more realistic effect. After a quick scan of the manual to discover the keys for aircraft control, the pilots amongst you will find it an easy matter to take off but, as always, reading the manual pays dividends.

The first solo flight

The manual gives a 5-page basic tutorial for those unfamiliar with flying. For those Aviator addicts on the old BBC, the first noticeable thing is that responses are much faster. This may be expected in comparing a jet to the Spitfire but the graphics are smooth with a screen refresh rate something in the order of 15 per second. Fight characteristics are good with the ability to perform any aerobatic manoeuvre. The landscape is basically flat with pyramid type hills, rivers with barges, roads with trucks, bridges, airfield buildings and odd fields. Whereas Aviator had wire frame graphics, Interdictor's are solid: you cannot fly through the hills as you may have done with Aviator! Most of the features lie in a northerly direction from the home airfield so there is little point flying away in another direction. The graphics are what might be expected from the Archimedes with, for example, shot enemy aircraft exploding into many pieces.

I found the Autostab control very useful. Flying with this on gives enhanced stability. This is best left off for tight manoeuvres but just in case you get disorientated, selecting Autostab will return the aircraft to level flight and centralise controls. A slightly annoying fact is that the program leaves the keyboard keys in auto-repeat mode so that if you linger on the B key too long, you can actually put your brakes on and off by the time you release it. In some directions there are no ground features visible so it is easy to lose height perspective if you do not monitor your instruments. You can only land at the airfields but if the runway looks narrow you can in fact land anywhere between the taxiway and the runway inclusive.

Into combat

This is not a simulator that can be mastered in a few hours – much practice will be needed to master combat flying. There are some local "friendly" targets for practice with the cannons, rockets and sidewinder missiles. The first venture North past the bridge will soon persuade you to practice on targets which do not shoot back. The scenario mission is to clear the enemy from the river valley by overcoming enemy defences and capturing airfields. This involves dogfights and air-to-ground attack runs. The enemy fighters are difficult to shake from your tail. Once the missile warning sound goes off some swift action is required to release chaff, flares and get into some steep avoiding turns. The first hit on your aircraft normally removes your electronic displays but you can get repaired by landing at a friendly airfield, assuming that is, you can escape the hostility. Not yet having captured the first airfield I cannot comment further but it certainly provides a challenge. How about some tactical advice from any RAF pilots who are Archive members?

Conclusion

As a first flight simulator for the Archimedes, Interdictor sets a standard. The sound and graphics of the Archimedes are used to good effect and the flight simulation is realistic. At £34.95 (or £30 through Archive) it is an expensive game but if you are a budding pilot then it will definitely keep you interested for many hours. A

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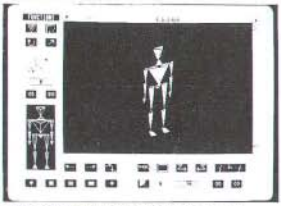

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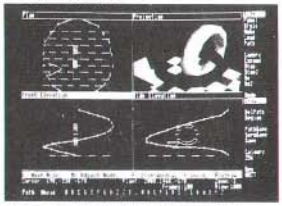

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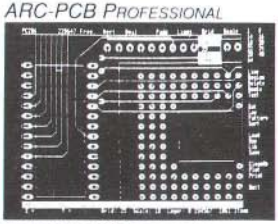

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First Word Plus Column

Stuart Bell

Thankfully, we have more answers than questions, this month! Here they are in chronological order of the problem being put:

(More) Printer Drivers

We had two responses to the request for Panasonic KX-P1124 FWP Printer Drivers, thanks to Messrs Marshall and Thompson. Both seemed OK (though obviously I can't test them without a KX-P1124), so I've asked Paul to put Mr Marshall's revised version on this month's program disc. (The alternative strategy of adding it to the original Shareware disc 6 would mean that there would be several different versions of the same disc in circulation – not a good idea.)

Palettes Re-Visited

In re-scanning old Archives, I found a solution to Tom Lakofski's problem with FWP palettes under RISC-OS. The RISC-OS palette format simply adds new information to the Arthur format. !Edit can be used to strip off the unwanted data so that FWP can understand it. (See Archive 2.9 p21, 'Old Palettes, please', for details.)

New Version of First Word Plus

Acorn have written to me confirming that a revised version of FWP is being developed. They have asked me not to publicise their planned release date, since it is highly tentative and they don't want to disappoint people by having to change it. I've requested an evaluation copy as soon as one is available and will pass on all details when I have them.

First Word Plus in Mode 20

J M A Brown has written to Paul with an improved solution to the 'Mode 20' problem for owners of multi-sync monitors, and also a way of driving different printers without having to select them from within FWP each time. See below.

IntModule, or * Commands from FWP

Often, problems or hints and tips on one particular topic run over several issues of Archive, sometimes several months apart and on rare occasions, earlier information is found to be in error and corrected in a later issue. What I plan to do from time to time is to collect such sequences and summarise them so that those with back copies will be able to trace the flow of information, whilst those without old Archives can still make sense of what I'm writing.

Steve Hoare's IntModule, which allows access to the * prompt from within FWP (useful for creating new directories and the like) was described in Archive 2.6 p44, and is found on Shareware disc 6. The module intercepts the event vector. This is the operating system's pointer in memory which holds the address of the routine which, among other things, deals with keyboard input, so that when a special key such as <ctrl-@> is pressed, the module detects it before FWP can 'see' it. Control is then passed to the operating system, which will execute * commands until a <return> is typed. You are then put back into FWP with the screen just as you left it! If you are interested in how to write modules, IntModule is a fine example of a well commented program. If you're not into SWINEs (Software interrupt if the Zero flag is not set), then just be a happy user.

Acorn's new release will almost certainly make it redundant but until then it's wonderful. Mike Hobart raved about it in Archive 2.8 p30, and on 2.8 p32 noted the changes necessary to run it under RISC-OS. Shareware 6 contains two versions, the most recent of which, dated May 1989, works very well under RISC-OS, I conclude that that's the one to use. Mike notes that to use Edit to access Obey files in the !1stWord+ directory, you must press <shift> whilst clicking on it. I never use Edit: why bother when I'm so used to FWP? So, my solution to the problem of incorporating such 'goodies' into my FWP program disc is as follows:

The key, under RISC-OS, is to amend the !Boot program which comes on the Support Disc for RISC-OS. As supplied, it contains two lines:

```
ADFS::0.$.!Boot for 1st WordPlus
$.!1stWord+
```

(Archive 2.9 p20 points out that use of the $ assumes that !1stWord+ is on the current drive and that if the Resource directory is not on the currently selected

drive the FWP will not boot correctly. Use of <F12> and *MOUNT (or *DRIVE) from the Desktop will correct this.)

Modifying !Boot, rather than !1stWord+, means that if you mis-edit the file, you can still get into FWP to re-edit it, by clicking on the unmodified !1stWord+ from the Desktop. But of course it also means that using !1stWord+ directly won't give access to these new facilities.

To use the Interrupt Module, copy it onto your FWP root directory, i.e. the one containing !Boot, and add the following lines between Acorn's two:

```
*rmrun INTMODULE
*INTERRUPT 0
```

This will make the Interrupt Module respond to <ctrl-@>, although other keys can be used, such as 15 - meaning <ctrl-o>.

If you now leave FWP, after saving the new version, and re-boot, FWP will NOT be entered! This is because the new !Boot will be saved as a text file, not an Obey file. Simply use <f12> to get a * prompt, type

```
SETTYPE !Boot OBEY,
```

and on re-booting, the Interrupt Module will be ready to be activated.

Now here are a couple of sizeable hints from John Brown in New Zealand...

Using mode 20

Some time ago Archive published a 'patch' to allow the use of mode 20 with this word-processor for those with multi-sync monitors. Whilst the patch worked, it had some problems in use (I forget what now), gave insufficient flexibility and seemed to be probably unnecessary when this mode is one of the two permitted. So it proved on investigation since all that is necessary is to save the mode 20 palette and then call it in an Obey file.

I give two techniques below since I use a hard disc at work but have only 2 floppies at home. Both may appear a little more complicated than necessary because I prefer to have the desktop and configuration status set for mode 15 for some of the other applications I use. In addition, on the hard disc, it seems unnecessary to call a BASIC program in the LIBRARY directory when the necessary commands can be incorporated into an initial Obey file. All files were modified appropriately for RISC-OS with the Support Disc.

Step 1: By means of the palette icon go into mode 12 and then mode 20, each time saving the resultant palette. (I use $.!Palette and $.!Palette20, respectively.)

Step 2: (i) Hard Disc: Using !Edit modify the standard 1stWORD+ loading program to read as follows:

```
| Obey file for mode 20 1WP
ECHO <22><20>
!Palette20
set FirstWordPlus$Resources
    $.Resources.1wp.
set FirstWordPlus$Docs &.1WP.
run $.resources.1wp.1wp
!Palette
```

SAVE as an Obey file – 1stWord20

The last line is needed to restore the normal desktop colour scheme!

(ii) Floppy:

a. Create a new Directory !1stWORD20

b. Copy all files from !1stWORD+ to !1stWORD20

c. Modify !Boot first line – change !1stWord+ to read !1stWord20

d. To achieve FWP icons, rather than defaults for a !Dir, use !Paint and change Sprite titles to !1stWord20 and sm!1stWord20

e. Change !Run as follows:

```
| $.!1stWord20.!Run for
    !1stword20 version 0.01
echo <22><20>
$.!Palette20
IconSprites <Obey$Dir>.!Sprites
WimpSlot -min 400K
set FirstWordPlus$Resources
    $.Resources.1wp.
set FirstWordPlus$Docs &.1wp.
run "<FirstWordPlus$Resources>1
                              wp"
```

```
$.!Palette
```

In fact, if you can stand the rather ghastly colours with mode 20 operating with a mode 15 Palette (same as mode 12?) the only new line required is the 'echo' statement! However, I do not recommend it.

The same slight misalignment of the screen boxes occurs as with the original 'patch' but causes no problems (so far!).

First Word with different printers

Between work and home I use 3 different printers (Star Gemini 10X, Brother HR25 or 35 and Star NX1000) – only two at any one place. The program VDU_23 (Archive 2.3 p44) proved very useful in producing a standard font set on screen with FWP in order to create the printer hex files without my poor memory confusing the issue. It is easy to insert *PRINT Gem_Codes into the appropriate !Run file (see below) and be guaranteed matching sets for the dot-matrix printers or the more limited daisy wheel characters for the Brother. Moreover, by judicious selection of keys and the <Alt> + <Key> (as in the August 1989 issue) it is possible to set up graphic symbols for !Draw and !Paint with the same dot-matrix file.

However, never being satisfied, I regarded the need to cancel the default word file directory, install a new printer driver and then return to the load file system as a bit of a nuisance if one knew already that the other printer was to be used. Your hint about putting BASIC files into Obey files (Archive 2.11 p5) plus a *DUMP of 1wp_string provided the answer of another auto-loading printer driver (or more if one cares). The 'loading title' for 1wp_print turns out on 'my' version to be in the line beginning &1C0. Thus:

a. Create two BASIC files to alter the title "1WP_PRINT" within 1wp_string and to return it to its original form after use. The idea is to alter it to "1WP_PRIN2" which calls a second 'default driver'. Thus, since I use the technique for the Brother printers, the files are "Brother" and "Brother1" as follows:

i.
```
10 REM >$.Brother Alters 1WP_PRINT
                        to 1WP_PRIN2
20 Y=OPENUP"$.RESOURCES.1WP
                       .1WP_STRING"
30 wp%=&32
40 PTR#Y=&1CD
50 BPUT#Y,wp%
60 CLOSE#Y
70 END
```

ii.
```
10 REM >$.Brother1 Restores
                             1WP_PRINT
20 Y=OPENUP"$.RESOURCES.1WP
                          .1WP_STRING"
30 wp%=&54
40 PTR#Y=&1CD
50 BPUT#Y,wp%
60 CLOSE#Y
70 END
```

A curious thing here – I tried putting wp%=2 in line 30 of the first program and ended up with 02 at &1CD – thus, using the hexadecimal numbers for '2' and 'T' seemed safer and worked 'first'(?) time!

b. Transfer the CFG file required to $.RESOURCES.1WP and rename as 1wp_prin2

c. As above, create a new $ directory – !1stWORDBR (floppy) or Obey file (Hard disc – 1stWordBro)

d. Rewrite as follows:

i. Hard disc file 1stWordBro

```
| Obey file for Brother printer
ECHO <22><12>
!Palette
BASIC -quit "$.Brother"
print $.Library.Gem_codes1
set FirstWordPlus$Resources $.
                     Resources.1WP.
set FirstWordPlus$Docs &.1WP.
run $.Resources.1WP.1wp
BASIC -quit "$.Brother1"
print $.Library.Gem_Codes
!Palette
```

ii. The floppy !1stWORDBR file !Run:

```
| !Run for !1stwordBr version
    0.01
echo <22><12>
```

```
BASIC -quit "$.Brother"
PRINT $.LIBRARY.Gem_Codes1
IconSprites <Obey$Dir>.!Sprites
WimpSlot -min 400K
set FirstWordPlus$Resources $.
                    Resources.1wp.
set FirstWordPlus$Docs &.1wp.
run "<FirstWordPlus$Resources>1
                                wp"
BASIC -quit "$.Brother1"
PRINT $.LIBRARY.Gem_Codes
```

The last line is required if some curious results are not to be obtained later (Gem_Codes restores all keys to normal keyboard function).

I'm sorry the above turned out to be so long but I've tried to be explicit, if somewhat repetitive, for those like myself who cannot see something obvious right under their noses until someone more expert provides the hint. Also for this reason, I make no claims to efficiency – what I've explained works for me after a few fumblings and that is enough. The experts can cut all the corners if they wish. However, a working system is achieved that gets rid of many redundant files at the expense of some modifications, two 'new' application directories, two palettes, two short BASIC files and an additional 'default' printer-driver.

Other hints

In my work I have little need for 1stMail and none for additional printer drivers to be created and always available (a copy of the original RISC-OS FWP discs can be used for these activities). Thus, I have created a 'working FWP floppy' which eliminates $.1WP.CFG, $.1WP.DAT, $.1WP.HEX, $.1WP.MRG and all files in Dir$ and Dir$.Resources.1WP which relate to 1stMail.

Altogether this gives a disk (before any files in 1WP.DOC) with a remaining working 'surface' of 468K as opposed to 306K on the original New1WP disc (with only one CFG and one HEX file)! Of course when I get 'IntModule' there will be some reduction but still ample for taking between work and home before going on to the hard disc for 'permanent' storage!

What is your policy on 'adaptations' for the magazine or for the various categories of discs? As stated above, given sufficient hints I can adapt parts of others' programs to my own purposes and have produced a disc indexing program, some biochemistry files adapted from MS-DOS, and a few other bits and pieces which I find useful. One hesitates to submit them since a few contain substantial chunks which would be clearly recognisable to their original authors in other magazines. I would most certainly neither claim total originality nor good programming ability de novo (even in some ofthe adaptations which do, however, work).

In the help category – isn't it about time we had a good string sorting routine in Arm code? (Or have I missed it somewhere along the line?). I use my own devising in BASIC for the disk indexing sorts. This works reasonably fast but I could do with something faster (and simpler?) and, as yet, am not up to Arm code work.

Keep up the good work – I find Archive to be most useful in my working situation (soon to be ended by elective early retirement) than is your rival Risc User. I must admit, however, from my limited experience to assess anything, that I think their programs are better on average if one is interested mainly in computers for their own sake (a bit harsh, perhaps, but many of us use computers as tools in our current work rather than as a totally new 'discipline').

Assoc. Prof. J.M.A. Brown

Finally...

It would seem that Acorn's new release will be a significant development for the FWP user community. Perhaps that will be the time to revise earlier versions of FWP-related programs which Archive has collected and, more importantly, to document them more thoroughly. Until then, keep writing in with your requests for help and solutions to problems. To save Paul re-directing everything, a reminder that I'm at 56 Crescent Drive North, Woodingdean, Brighton, BN2 6SN (no phone calls, please), and would be glad to receive hints, problems, wishes and cries for help, by about the 20th of each month if you want to make the next issue. A

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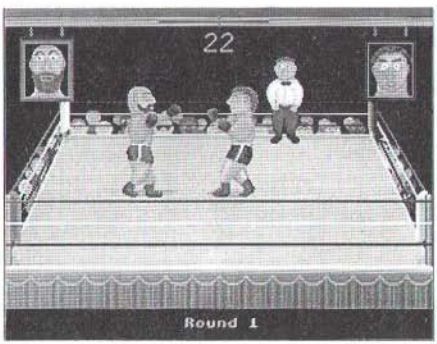

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E-type – Driving Game

Pete Holdroyd (+ two younger persons!)

Not being much of a games player, it was with some trepidation that I undertook to review this program for Archive. As you will see, I sought the assistance of two dedicated knob-twiddlers, button-pushers and rodent operators, who have the enormous virtue of coming cheap. But first, a flavour of the package:

E-Type is a motor-racing game but, to the extent that you appear to be driving down ordinary roads not race-tracks, it is different from such old favourites as Revs. Five 'roadscapes' are included; steer-ing and control is by mouse.

The package comes in one of those plastic cases which look as if they should contain a CD, with a card insert of instructions, and two 3.5" discs. The first of these contains a !BOOT file and the main program together with a text file which supplements the instructions on the card, whilst the second contains the five 'tracks' or roadscapes. The program can be started by pressing <shift-break> after inserting the disc in the drive.

After loading, a very impressive title screen appears bearing the E-Type logo and an invitation to insert a Tracks Disc. This disc stays in the drive while you are playing. A Tracks Designer disc is now available for £16.95 incl. to extend the number and variety of tracks as you like. Options are available to alter the skill level, select which Track you want to follow (selecting ALL is possible), altering the response of the mouse movements and inserting the name of the driver (You!).

For complete beginners, like me, it is possible to select 3-speed automatic transmission (4-speed manual with overdrive is there for the clever stuff), skill level 1 (of 15), and a 'low-geared' mouse. Having done so, there I was lined up in the middle of the road, the engine running, being thoroughly impressed by the quality of the graphics and sound. The package I was given for the review warned me that I should see 'real digitised cars' from 'hi-tec video sampling', and hear the 'real digitised sound' of an E-Type, 'sampled from 5.3 litre fuel injected engine', but seeing and hearing it was still amazing.

This opening scene is momentarily confusing. At the bottom is a dash board with six instruments and to the right a steering wheel. There is even a pair of hands which turn the wheel as you move the mouse to steer. The thing is that in front, is the rear view of an E-Type – yours, in fact – containing 'you', the hairy-chested one in the driving seat, and the obligatory pneumatic blonde beside you, presumably promising some sort of diversion if ever you can take your eyes off the road ahead. Hard luck if you happen to be female – this game expects drivers to be male.

I pressed the accelerator button and we were off, with a puff of smoke from the back wheels. Even with the thing set up for a games moron, within seconds the car was hurtling down the road at a speed which would fail the driving test at once. Zipping into view come obstacles such as rocks and policemen, snowmen and oil-slicks. And cones. And trees. And pylons. Not to mention other cars.

When (not 'if', you'll notice) you hit some of these obstacles, there is a sickening crump and the car stops dead. Both occupants are hurled into the air – fortunately, and tidily, landing back in the car – and the wheels fall off. Shortly, you are hauled into the middle of the road and life can begin again. When you hit the cones, they fly into the air and there is a succession of plopping sounds as you strike them. Running over the policemen and snowmen causes howls of anguish to sound over the roar of your throaty exhaust. Rear-ending another car causes a crump-sound and causes you to lose speed. As you do, other cars are liable to hurtle past you, with further 'crumps' as they take chunks of your paint job with them. The oil-slicks can make you skid: and they do!

Some of the sound effects and many of the images caused great mirth on first seeing them. When you have finally run out of luck, the back bumper drops off your battered wreck or you slide, with dignified finality, beneath the surface of a broad *(which is Norfolk for 'lake'. Ed.)*, having shot off the road altogether – and are faced with a scoresheet which

shows just how far short you are of ever getting on the drivers' championship table.

E-Type is written by the creator of 'Holed-out', which, I gather, is an excellent representation of the game of golf. E-Type can, in my view, also be described as excellent. Both sound and pictures make full use of RISC-OS's speed and capability. I am not inclined to be a games player but E-Type is one I'm sure I shall, from time to time, boot up. Graphics 10, Sound 10, Playability 9.

E-Type – by Alexander Holdroyd (aged 10)

The objective of E-Type is to cover as much distance as possible on each of five 'tracks'. When you have started the game, the dashboard makes you feel inside the car. The mouse buttons are 'clutch', 'brake' and 'accelerator', from left to right.

I think it is good when you sink in water and when you hit sandbags, rocks, telegraph posts and several other obstacles. Policemen who are run over scream at you. I think it is good fun hitting cones and skidding on oil slicks.

Backgrounds are of lakes, small hills and snow-capped mountains and greenery. On the track called Antarctica, the mountains are completely snowed up and so is all the grass, but in parts you get to sunny weather. The Broads has hills and twisting lanes and, of course, water. I think the Sphinxes and pyramids look good from the track called The Sahara and in the distance, I like the dunes. One of the tracks, Moonlighting, is set at night. I like all the street-lamps lighting the road, the buildings all lit up and your rear tail-lights blazing away.

For most of the time, I've been in Automatic and it is hard for beginners. In manual, I find it even harder, as would be expected. At first go, with manual, I didn't know what to do, because it didn't tell you on the card insert.

I didn't like the way that other cars kept on swerving in front when you're overtaking, because you'll always hit them.

Graphics 10, Sound 10, Playability 9.

E-Type – by Stephanie Holdroyd (aged 14)

You begin on the Lakes. Using the right hand mouse button you accelerate and rush off down a long, winding road littered with various obstructions. Do not try to hit them (like some people do!) but try to avoid them and to collect as many time-bonuses as possible because there is a two minute time limit on each section.

Antarctica is a bit longer with a few extra hazards. The third level, the Broads, is even more difficult because at times the road goes over water, and if you're going too fast you may drive off the road and sink! Level four is called the Sahara although it looks more like ancient Egypt, but who cares? The game and graphics are so good anyway you really can't complain! Last but definitely NOT least is Moonlighting. This is driving by night. As well as all other obstacles watch out for telephone boxes and street lamps. Be warned, if you're on a higher skill level, such as 13 or something like that, and crash badly, the bumper of your lovely E-type Jaguar drops off with a clang and that's the end of your go.

When you've died or run out of time, a screen comes up showing you the all-important score. The 5th place score in the E-type Hall of Fame is about 40,000 which I thought was a little over the top at first but I found that once I'd played a few times, I was getting the hang of the game and it wasn't long before my name was on the top five list.

Having said all that I must mention the fact that this game is mouse controlled only (admittedly, using the keyboard would be very tricky but a joystick option would be nice.) *(You can play it with the Voltmace joystick, but my boys reckoned it was more difficult than using the mouse. Ed.)* Also I feel that it should have been better explained how to use the manual gear. Personally I find the manual gearbox very fiddly and so stay in automatic.

Having had my little grumble I still say this game is FANTASTIC! I thoroughly recommend it. Graphics 9.5, Sound 10, Playability 9.

E-type ispublished by 4th Dimension at £19.95. (£18 through Archive.) A

Contact Box

• **Malaysia Archimedians?** – Contact Peter Carter, 7 Lorong Taman Pantai Satu, Pantai Hills, 59100 Kuala Lumper, or ring him at work on 03–756–2311 (Petaling Jaya) A

Introduction to C – Part 2

Chris Dollin

In the last article, we saw how to declare and call simple C functions. In this one, we'll go into more detail about C declarations and statements, using as an example shuffling and dealing a pack of cards.

Reminders: the language discussed in this series is C as defined by the forthcoming ANSI standard (referred to occasionally as "the Standard"), not "classic" C – some familiarity with programming is assumed but please let Paul, Martyn or I know if you think the articles could be improved!

Pick a card, any card

First of all, we have to decide how we're going to represent a card in a C program. Since the only types we've seen have been *int* and – briefly – *char*, we'll pick the more familiar *int*. But to allow us to change our minds more easily later, we'll disguise the type using:

```
typedef int Card
```

This declares *Card* as a new name for *int*. The facts of life about cards are that they are completely defined by their suit and rank, so to complete the disguise, we must be able to make cards and take them apart.

```
typedef int Suit;
typedef int Rank;
```

Suit and *Rank* are synonyms for *int*, just as *Card* is.

```
#define CLUBS 1
#define DIAMONDS 2
#define SPADES 3
#define HEARTS 4
#define FIRST_SUIT 1
#define LAST_SUIT 4
```

The *#define* introduces a ***macro definition***, which says that the name (*CLUBS*, etc) is defined to mean (that is to say, will be textually replaced by) whatever follows it up to the end of the line. (This is the traditional way of defining constants in C – we'll discuss other ways in future articles.) These definitions give names to the suits and also names to the "first" and "last" suit, which makes it easy to write loops without having to know the ordering of the suits.

```
Card make_card( Suit suit, Rank
    rank )
    {
    return (suit << 4) + rank;
    }
```

We'll represent a *Card* as its suit shifted left plus its rank. "<<" is C's *left shift* operator, which takes the binary representation of its left operand and shifts it left by the number of places specified by its right operand. (Loosely speaking, a shift left of one place is a multiplication by 2, and a shift right of one place is a division by 2.)

```
Suit card_suit( Card c )
    {
    return c >> 4;
    }
```

Similarly, ">>" is C's *right shift* operator.

```
Rank card_rank( Card c )
    {
    return c & 0xf;
    }
```

"&" is C's *bitwise-and* operator, similar to BASIC's *AND*. *0xf* is C's way of writing the hexadecimal constant F (i.e. 15). The effect of these definitions together is to permit the rest of the program to operate without knowing how *Card*'s are represented. What we can be sure of is that

```
card_rank( make_card( suit, rank )
                                ) = rank
card_suit( make_card( suit, rank )
                                ) = suit
```

which would seem to be the essential properties.

You may be wondering why we've gone to all this effort just to describe cards in such detail. Couldn't I have just used the numbers 1 to 52, or even this shift-and-mask trick, and written the code knowing what *Card*'s were? Wouldn't it be more efficient than all of these function calls and easier for us to have got started?

As far as efficiency goes, we'll see later on how to arrange that these procedure calls get replaced by more efficient macros. However, the primary reasons for all of these definitions are *clarity* and *robustness*. Clarity, because the type and function names make it clear what is going on (and give the compiler more

chance of checking that it all makes sense): robustness, because we are now free to change the representation of *Card* and *Suit* (although *Rank* is a tougher nut to crack), and the change need affect *only* these definitions. This isolation of representation pays off over and over again in large programs.

Where's a Card?

In the last article, we used variables that had been declared as arguments to functions, but we didn't introduce any others. Here's the declaration of a pack of cards.

```
Card pack[52];
```

This declares *pack* as an array with 52 elements, each of which is a *Card*. The elements of this array have subscripts running from 0 to 51: C arrays have lower bounds fixed at 0 (like BASIC, but unlike Pascal), and the number appearing in the declaration is the number of elements to allocate, rather than the upper bound (unlike both BASIC and Pascal).

The elements of the array are initialised to "appropriate zeros", which in this case means 52 *0's*; not very appropriate for a pack of cards. We'll write a function to initialise the pack properly:

```
void initialise_pack(void)
    {
    Suit s;
    Rank r;
    int i = 0;
    for (s = FIRST_SUIT; s <=
    LAST_SUIT; s = s + 1)
        for (r = 1; r < 14; r = r
                                + 1)
            {
            pack[ i ] = make_card(
                                s, r );
            i = i + 1;
            }
    }
```

The declarations of *r*, *s* and *i* are *local* to the function *initialise_pack*; they are only visible inside it and once *initialise_pack* has finished, the variables disappear. (Unlike BASIC, where a *LOCAL name* appearing inside a procedure or function will leave a global name *name* around after the procedure has finished executing, even if there wasn't one before.) The declaration of i also *initialises* it to *0*: the initial values of *r* and *s* are unspecified rubbish. (Automatic initialisation to appropriate zeros is done only for variables declared outside functions.)

The function's body consists of a single *for-statement* (it looks like more than one statement, but bear with me). The general form of such a statement is:

```
for (Initialisation; Test; Step)
    Action
```

The *initialisation* is executed first. Then, while the *Test* is true, the *Action* and then the *Step* are performed. The *Action* is a single statement.

The initialisation *s = FIRST_SUIT* is an assignment, which sets the variable *s* to hold whatever value *FIRST_SUIT* represents. The test *s <= LAST_SUIT* is true while *s* has a sensible suit value. The step *s = s + 1* increments *s*. These three components between them ensure that the *Action* of the for-statement is performed once for each suit value.

The action of the *s-loop* (the loop controlled by *s*) is itself a for-statement. This time, it is the variable *r* which changed, running from *1 to 13* inclusive. The body of the r-loop is again a single statement. This time, however, we want to perform more than once action within that statement, so we group two statements together using the *statement brackets*, "{" and "}".

The two statements are both assignments, one updating the current element of the pack array and the other moving *i* on to index the next. The syntax for an array reference is just to follow the name of the array with the index enclosed in square brackets; the index can be any integer-valued expression. Note well the following: **C does not do any subscript checking at all, ever.**

Were we to write *pack[i+1000]* rather than *pack[i]* in *initialise_pack*, the best we could hope for is that the program would fall over loudly with a message from the operating system about an "invalid address" or some such. The worst would be an apparently working program which suddenly fails to work after a change that couldn't *possibly* make any difference. It is the programmer's responsibility to ensure that subscripts are within range.

The end result of *initialise_pack* is that all the elements of *pack* are set to valid distinct cards.

Assignations

Because assignments like

```
i = i + 1, k = k * 2
```

are so common, C has some special syntax for them.

For the arithmetic and bitwise operators ("*", "/", "%" (remainder), "+", "-", "<<", ">>", "&", "|" (bitwise AND), "^" (bitwise exclusive OR)), the assignment

```
V = V Op E
```

(*V*'s a variable, *E*'s an expression, *Op*'s one of the operators) can be written as

```
V Op= E
```

so that the examples above can be written as

```
i += 1, k *= 2
```

Note that assignments are *expressions* (turned into statements by a following ";") and can appear as the right-hand-side of other assignments, so we could write

```
i += k *= 2
```

which adds twice the old value of *k* to *i*, doubling *k* in the process. That particular form is unusual, but assignments like

```
i = k = 0
```

are not uncommon.

The case of adding and subtracting *1* to and from a variable are so common that they can be further abbreviated:

```
++i, --k
```

add one to *i* and subtract one from *k*. The values of these expressions are the new values of *i* and *k*. The similar expressions

```
i++, k--
```

also increment *i* and decrement *k*, but the values of the expressions are the old values of *i* and *k*.

We can now re-write *initialise_pack* to take advantage of these shorthands:

```
void initialise_pack(void)
    {
    Suit s;
    Rank r;
    int i = 0;
    for (s = FIRST_SUIT; s <=
    LAST_SUIT; s++)
        for (r = 1; r < 14; r++)
            pack[ i++ ] =
    make_card( s, r );
}
```

Some words of warning. Expressions which change the values of variables, such as the assignment operators, are said to have *side-effects*. An expression which has more than one side-effect on the same variable is at best very bad style – so bad that the Standard says that such programs will exhibit *undefined behaviour*, up to and including your computer turning into a butterfly and fluttering away. (I owe this example to Chris Torek of the University of Maryland).

Similarly, C does not define the order of evaluation within an expression to be anything in particular; and a program that expects (for example) the arguments of a function call to be evaluated left-to-right will also exhibit "undefined behaviour".

Shuffling

Playing with an initialised pack is a little boring – you'll get the same cards every time. We need some way of shuffling them. My usual shuffling algorithm works like this: work through the pack, exchanging the current card with any of the cards in the uninspected part of the pack (including itself), until there are no cards left.

```
void shuffle_pack(void)
    {
    int i;
    for (i = 51; i != 0; i--)
        {
        int j = rand() % (i + 1);
        if (i != j)
            {
            Card c = pack[i];
            pack[i] = pack[j];
            pack[j] = c;
            }
        }
    }
```

The for-loop counts *i* down to zero, for a change; "!=" is C's not-equal test. The body of the loop is a bracketed statement (notice that we can declare local variables inside such a statement, in which case it is called a *block*). *j* is an index to an arbitrary card in "the rest" of the pack. The library function *rand* returns an integer in the range 0 to RAND_MAX (a constant which is at least 32767). The operator "%" is C's remainder operator, giving the remainder when the left operand is divided by the second, so *rand() % (i + 1)* delivers an integer in the range 0 to i inclusive. To use *rand*, you should put

```
#include <stdlib.h>
```

near the top of your program.

If *i* and *j* were the same, then we would be exchanging the card with itself, which is harmless but pointless, so we use C's *if-statement* to avoid it. Note that there is no *then* keyword and that the brackets round the test are obligatory. The general syntax is

```
if (Test) Statement
else Statement
```

(The *else* part is optional.) Incidentally, the way the for-loop is written, the code never inspects the very last card: since it could only be exchanged with itself, there isn't a great deal of point.

Dealing

After shuffling, dealing is a doddle, once we've decided how many players. Four is a good number (I play Bridge):

```
Card players[4][13];

void deal_cards(void)
    {
    int i = 0, player, card;
    for (player = 0; player < 4;
                              player++)
       for (card = 0; card < 13;
                               card++)
          players[player][card] =
                            pack[i++];
    }
```

players is a two-dimensional array: effectively, an array of arrays. (There are problems with this representation, which we'll discuss in a later article.) To refer to a particular element, you must supply two indices.

Presenting

This is all very well, but we haven't seen any output from this yet! We'd better write some functions to print cards, packs and hands:

```
char *ranks = "?A23456789TJQK";
```

The declaration *char *ranks* declares *ranks* as a pointer to *char*. It is initialised to point to the string; in C, a string is an array of characters and arrays are usually handled with pointers to their first element.

```
char *suits[] =
    {
    "(no suit)",
    "clubs",
    "diamonds",
    "spades",
    "hearts"
    };
```

The declaration *char *suits[]* declares *suits* as an *array of pointer* to *char*. The size of the array is initially unspecified but the initialisation – series of values between the braces – has five values, so *suits* ends up being five elements long, each element being (a pointer to) a string.

Since both our rank and suit types avoid using *0* as a legitimate value, the *0*'th elements of *ranks* and *suits* are set to "noticeable" values.

```
void print_card( Card c )
    {
    printf
        (
        "%c of %s",
        ranks[ card_rank( c ) ],
        suits[ card_suit( c ) ]
        );
    }
```

The new format character "c" causes the next argument to be printed as a character.

```
void print_pack(void)
    {
    int i;
    for (i = 0; i < 52; i++)
        {
        print_card( pack[i] );
        printf( "\n" );
        }
    }


void print_hands(void)
    {
    int player, i;
    for (player = 0; player < 4;
                          player++)
        {
        printf( "Hand for player
                  %d\n", player );
        for (i = 0; i < 13; i++)
            {
            printf( "   " );
            print_card( players[pl
                        ayer][i] );
            printf( "\n" );
            }          }
    }
```

Sit Down and Play

So we can write a complete *main* for dealing out and displaying a pack to four players.

```
int main( int argc, char *argv[] )
    {
    initialise_pack();
    shuffle_pack();
    printf( "Shuffled pack:\n" );
    print_pack();
    deal_cards();
    printf( "Dealt hands:\n" );
    print_hands();
    }
```

In the next article, we will discuss arrays and pointers in a little more detail and introduce the notion of *structures*. A

A Bin for RISC-OS

David Johnston

RISC-OS provides many new facilities for programmers to exploit when writing programs for the Archimides. Programs can now be written to multitask with others, messages can be passed between those programs and the host of other features available has produced an expanded Programmer's Reference Manual that is a four volume monster costing £75. Given that the PRM is so expensive and that cheaper books detailing RISC-OS's features are unlikely to be available for a while, programmers wishing to take advantage of RISC-OS have very little information to go on. Fortunately, the applications discs provided have many small programs, written in BASIC, that use the new techniques and can serve as useful examples from which to glean information.

One such program is !TinyDirs. This uses many of RISC-OS's features: it multitasks, it has icons dragged onto it (one form of message passing) and it installs itself on the desktop's icon bar. The program explained in this article is based on !TinyDirs and provides a feature of most computer desktops which is sadly missing from RISC-OS – a bin.

This article assumes that you are familiar with the WIMP concepts that existed under Arthur as they have been described on many occasions previously (e.g. Adrian Look's series in earlier Archives) and trying to understand all the techniques used in the program in one go from scratch is a bit optimistic. I have also assumed that you understand how to go about creating application directories and have only included a short description of the bin's obey files at the end. (See Gerald Fitton's article in Archive 2.10 if you don't.)

Multitasking

Programs that are 'RISC-OS aware' multitask and although the actual task-switching is done when a program is in a call to Wimp_Poll, we still have to let the window manager know that the program will multitask. This is done by Wimp_Initialise. The parameters passed are:

1) the version of the WIMP needed, multiplied by &100 (version 2 is the RISC-OS one so the number is &200)

2) the word "TASK" held as 4 ASCII codes (the program sets up a word of memory to hold it but you could just as easily use the value &4B534154 which is essentially the same thing)

3) a string is passed which holds the name of the program used in the Task Manager window.

Message Passing

RISC-OS allows programs to pass messages to and from each other and the window manager. Sending messages is achieved by using a new SWI call – Wimp_SendMessage. Message passing is far too complex a subject to explain fully here so I will only describe the messages received by the bin program.

Messages are received via two new reason codes returned by Wimp_Poll – 17 and 18. The bin program deals with receiving messages by passing them straight to PROCmessage where the two message types expected are handled. The first type Message_Quit (0) means close down application and the program responds to this by a call to "Wimp_CloseDown" and then exits. The other message type expected is a Message_DataLoad (type 3). When a file is dragged onto a application's icon the Desktop sends the application a Message_

DataLoad message. The actual message is the full path name of the object to be deleted.

Since it is the full path name we don't need to worry about adding directory names or the like. We do however, since we are working in BASIC, have to convert the filename supplied from a C type string (characters followed by ASCII 0) into a BASIC type string. This is done by FNstring which takes the address of a C type string and returns a BASIC string version of it. This string is passed to PROCdeletefile. In this case, the WIMP expects the message to be acknowledged so the first thing PROCdeletefile does is send a message to acknowledge the receipt of the object name. The object is then deleted using OSCLI("Delete...). If the object can not be deleted (e.g. if it is locked) and error is generated by the ON ERROR statement in line x (see Error Messages ... below).

Installing Applications on the Icon Bar

Many RISC-OS programs place their icons on the icon bar so as to be more conveniently available. The icon bar is actually a special window that has two window handles, –1 for the right hand side and –2 for the left. We can put icons onto the icon bar using the usual Wimp_CreateIcon call but, since this is a special window, we have to use Wimp_CreateIcon in a special way. Normally we specify the icon's size by defining a bounding box relative to the window's origin. We can't do this with the icon bar because we don't know exactly where the icon will go. Other icons may have been placed on it before we try to place ours. The solution is to specify the icon's horizontal width rather than its position and use one of the special window handles (i.e. –1 or –2) to indicate on which side of the icon bar the icon should be placed. The icon's vertical position is specified relative to the icon bar's origin as normal.

In the program, the bin icon is placed on the icon bar by PROCinstallbin. This defines two blocks of memory to hold the text to go below the sprite and the sprite name. It gets the sprite's size (in pixels) and mode using Wimp_SpriteOp. It converts this size into OS coordinates using OS_ReadMode Variable and left shifts. N.B. – the icon's size must be specified in graphics coordinates not pixels – hence the need for this conversion. In this program, the icon is defined as containing both a sprite and some text. Since the text may take up more space than the sprite, a check is made to see if it is larger and the icon's size is altered if necessary. The value –2 is used as the window handle so the icon will appear on the left hand side of the icon bar. The bounding box is set up using the coordinates calculated previously and the flags are set appropriately. The icon's data is indirected and is set up a follows:

The pointer to the text (q%!24) is set to the address of the text buffer (text%).

The pointer to the validation string is set to the address of a block containing "S" followed by the sprite's name. This allows us to have a sprite name that is different from the text.

The buffer length is set to the length of the text (LEN(text$)).

The icon is finally created with Wimp_CreateIcon.

Error Messages in Windows

Windowing systems such as GEM or the Mac's Toolbox provide facilities for programs to request confirmation from the user for various actions by the use of alert boxes. The WIMP supports alert boxes via Wimp_ReportError. The message supplied to the routine is in the form of a RISC-OS error block which is printed in a window with a warning road sign on either side. A RISC-OS (or indeed Arthur) error block is an integer error number followed by a C type string to hold the error message (see how FNerrblk constructs one). Flags can be used to set the exact format and behaviour of the alert box but in this case it only has an OK box. The name of the program in which the error occurred can also be passed.

All error messages in this program are dealt with by the ON ERROR SYS "Wimp_ReportError" line near the beginning of the program. The first parameter is the address of the error block and contains a BASIC error message (e.g. Syntax error). FNerrblk creates the error block. Delete the :REM in this procedure to help find typing errors when entering the program.

Obey files and sprites.

The obey files are both straight forward. The !Boot

file simply adds the bin's sprites to the WIMP sprite area. The !Run file adds the bin's sprites to the WIMP sprite area again just to make sure they are there, sets a 16K WIMP slot to run the program in and then runs it. The !Sprites file should contain a bin shaped sprite called !Bin that is roughly 68 OS coordinates square (e.g. 34 * 17 pixels in mode 12).

Suggestions for improvement.

As it is, the program provides a simple Atari ST type bin that was deliberately kept short so that it could be printed in the magazine. It therefore allows plenty of scope for improvement. An option to confirm the deletion of objects, especially locked ones and directories, would improve the program and converting it into a Mac type bin should is reasonably straight forward once you figure out how to do it.

(For the uninitiated, a Mac type bin is effectively a folder into which files can be dropped for deletion but they can be taken out again unless you have actually told it to "empty the wastebasket". Ed.)

```
| !Boot file for !Bin
IconSprites <Obey$Dir>.!Sprites

| !Run for !Bin
IconSprites <Obey$Dir>.!Sprites
WimpSlot -min 16k -max 16k
Run <Obey$Dir>.!RunImage %*0
```

```
 10 REM > !Bin.!RunImage
 20
 30 DIM q% &100, errblk% &100
 40
 50 DIM t 4:$t="TASK"
 60 SYS "Wimp_Initialise",200,!t,"Bin"
 70
 80 PROCmenus
 90 PROCinstallbin
100
110 ON ERROR SYS "Wimp_ReportError",
       FNerrblk(ERR,REPORT$),1,"Bin"
120
130 REPEAT
140   SYS "Wimp_Poll",0,q% TO action%
150   CASE action% OF
160     WHEN  6 : PROCmouse(q%)
170     WHEN  9 : PROCdecodemenu(q%)
180     WHEN 17,18 : PROCmessage(q%)
190   ENDCASE
200 UNTIL FALSE
210
220 DEFPROCmouse(q%)
230 mx%=q%!0
240 my%=q%!4
250 mb%=q%!8
260 IF q%!12<>-2 THEN ENDPROC
270 CASE mb% OF
280   WHEN &02 : menuicon%=q%!16
290     SYS "Wimp_CreateMenu",,
          iconmenu%,mx%-iconmenu%!16
                          /2-24,96+44
300 ENDCASE
310 ENDPROC
320
330 DEFPROCdecodemenu(q%)
340 CASE !q% OF
350   WHEN 0 : SYS "Wimp_CloseDown"
                                  :END
360 ENDCASE
370 ENDPROC
380
390 DEFPROCmessage(q%)
400 CASE q%!16 OF
410   WHEN 0 : SYS "Wimp_CloseDown"
                                  :END
420   WHEN 3 : PROCdeletefile
                     (FNstring(q%+44))
430 ENDCASE
440 ENDPROC
450
460 DEFPROCdeletefile(file$)
470 q%!12=q%!8:q%!16=4:SYS "Wimp_
              SendMessage",17,q%,q%!4
480 OSCLI("*Delete "+file$)
490 ENDPROC
500
510 DEFPROCinstallbin
520 LOCAL sx%,sy%,sm%,px%,py%
530 sprite$ = "!Bin"
540 text$ = "Bin"
550 DIM sprite% (LEN(sprite$)+1),
                      text% LEN(text$)
560 $sprite%="S"+sprite$  :REM
   Validation string to define sprite
570 $text%=text$
580 SYS "Wimp_SpriteOp",40,,sprite$
                   TO ,,,sx%,sy%,,sm%
590 SYS "OS_ReadModeVariable",sm%,4
              TO ,,px% : sx%=sx%<<px%
600 SYS "OS_ReadModeVariable",sm%,5
              TO ,,py% : sy%=sy%<<py%
610 IF LEN(text$)*16 > sx% THEN
                    sx%=LEN(text$)*16
620 !q%=-2
```

```
630 q%!4=0:q%!8=-16:q%!12=q%!4+sx%
                          :q%!16=20+sy%
640 q%!20=&1700310B
650 q%!24=text%
660 q%!28=sprite%
670 q%!32=LEN(text$)
680 SYS "Wimp_CreateIcon",,q% TO !q%
690 ENDPROC
700
710 DEFPROCmenus
720 DIM iconmenu% 28+1*24
730 $iconmenu% = "Bin"
740 iconmenu%?12 = 7
750 iconmenu%?13 = 2
760 iconmenu%?14 = 7
770 iconmenu%?15 = 0
780 iconmenu%!16 = LEN"Remove"*16+12
790 iconmenu%!20 = 44
800 iconmenu%!24 = 0
810 iconmenu%!28 = &80
820 iconmenu%!32 = -1
830 iconmenu%!36 = &07000001
840 $(iconmenu%+40)="Remove"
850 ENDPROC
860
870 DEFFNstring(a%)
880 LOCAL b$:b$="":WHILE ?a%<>0:b$+=
          CHR$?a%:a%+=1:ENDWHILE:=b$
890
900 DEFFNerrblk(err%,report$)
910 !errblk%=err%:$(errblk%+4)
      =report$  +" at line "+STR$ERL
920 errblk%?(4+LEN$(errblk%+4))=0
930 =errblk%
```

First Impressions of Impression

Mike Hobart

No, not a return to the First Word Plus column, but an attempt to give a taste of the new Computer Concepts document processor, Impression.

I liked what I saw at the Acorn User show in July and splashed out at the special show price, in the expectation that I would receive a delayed, slightly half-baked package containing some compact and bug-ridden code offering a special and powerful combination of a word-processor and DTP package. I was not disappointed. Computer Concepts wrote to offer an incomplete version for learning purposes, I accepted and the goods arrived in late September, with a preliminary manual. To my surprise, I also became one of the earliest owners of a "Dongle" (AKA "Hardware Key") for the Archimedes, which fits in the parallel printer port, and, to my frustration, an unreadable program disk!

While I waited for the replacement, I read the manual, breaking the habits of a lifetime. This preview is therefore perverted by having started with an outline understanding of the program. In view of the high standard of the dialogue boxes, both in appearance (which is stylistically distinctive, once you are past the first level, and pleasant) and in clarity of layout, I suspect that I might have done quite well without reading much first.

The version of the program which I am trying to preview is 0.72. It is fully and carefully acknowledged as pre-release, with a booklet detailing its known shortcomings. This is therefore not a proper review, but just a few comments and feelings about the pre-production product.

First impressions

Impression is quite usable in an unexpanded 310, but would clearly benefit from more memory and a hard disk. When a document grows too big to fit into memory, Impression uses a virtual memory system to transfer parts of the document to disk. With a single floppy, even careful organisation of files onto program and document disks cannot avoid fairly frequent disk swaps when you try to move outside simple text manipulations. The ability to manage documents running to hundreds of kb is impressive (you now need a copy of Roget's thesaurus to write a review!).

A large range of storage options, import and export facilities are supported. Full Impression format documents are stored as collections of files in application directories. This is a bit bizarre, but has some advantages, such as that double clicking on a !document/application icon will try to autoload Impression. It also points up a drawback of ADFS as compared with (may I be forgiven) DOS, in that file types are not used to distinguish between files of the same name, and consequently demands the overhead of additional directories. Impression does not save backup copies of documents for you.

The word-processor

Impression aims to offer most of the features which you would want in a desktop publishing package, yet,

at the same time, offering the convenience of a word-processor. The word-processor claim seems to be fully justified, even if the set-up is a little more complex than a simple boot-up (assuming you have only a single floppy machine). Some of the usual features of a wordprocessor are not normally present, such as a ruler.

The reason is simple: you do not need one for the most part, because the display is about as close to WYSIWYG as you could want. There is also no key or command to format the text: you will never need it, it just happens, in accordance with the selected style, including justification.

The usual word-processing facilities are there: cut and paste, movement around the text by line, page and "story" vertically and by character, word and line horizontally by key as well as by mouse. When you "drag" with the mouse to highlight text or to resize a window, you can drag beyond the screen boundaries, the text automatically scrolling as you go. Swap case is mercifully present, and a spelling checker is to be supported. Impression keeps up with my typing speed, even though it uses Acorn's outline fonts for its display, and even if I am inserting text, which demands that all text below the caret is reformatted when the current line overflows (i.e. about once per new word).

For the short-sighted...

I have become rather fond of the system font over the years, having been a "View-in-mode-3" fan in my time. Now my vision demands bifocals, I need something a bit clear, clearer than Trinity medium 14 point at real size. With Impression, that is no problem: just open a second window onto the document you are writing and scale it to 200%. If I really had a visual handicap, I think I would enjoy being able to use this electronic magnifying glass. Impression supports up to four windows on any document, each at any scale and looking at any part of the document. You can work in any window and the changes in the document are seen in all windows.

DTP features

You can have up to 15 documents open at once and each document can contain numerous "stories" (each being a continuous piece of text) and chapters (a collection of stories beginning and ending on a fresh page). Pictures (sprite or Draw) are stories. Stories fit into frames and can be made to flow into other frames. The DTP aspect of Impression demands that you control the frames in which everything fits. The range of options seems vast (overlay, transparent, etc). The only limitations seem to be that frames must be rectangles and that they must fit on a page.

Printing

Printing uses the Acorn RISC-OS graphics printer drivers. Plutocrats can use Postscript, the rest of us HP-Laserjet (a bit coarse) or dot matrix. Even 9 pins can do wonders if they do quad graphics, in some ways better than Laserjet. A useful and interesting feature is the ability to print text in native printer text modes, with the styles seen on screen being given the nearest interpretation that can be made. Thus, there is a possibility of a daisywheel driver being written.

How does it compare?

I could go on at length, but a full review should wait for the full program, and be written by a DTP expert. I have used Pagemaker on the Mac, but there is just no comparison. Impression is so much better integrated from text entry to output management, more intuitive use, faster and more flexible.

The question which needs answering is this: is this program loveable? Wordwise and View have their devotees (both had great merits), Pipedream 3 is going to develop a group of joyful users, while First Word Plus has its good qualities (quite WYSIWIG, continuous spelling checker), but I, at least, was never a real enthusiast and, as offered, it could be infuriating, especially the lack of OS access.

A very brief exposure to Impression suggests that it is satisfying to use, quite free from frustrations (bugs in 0.72 excepted) and that it will be loved, perhaps even become the standard if you want a good, simple wordprocessor which allows you to go all the way to fancy DTP.

The future?

Computer Concepts asked for feedback when they sent out the pre-release copies of Impression and I wrote off with a list of comments and a copy of this preview. A letter arrived from Computer Concepts just before I posted this to Paul. It is a point-by-point reply to the comments on some of the features of Impression 0.72 which I do not like or which were errors. Such responsiveness is rare indeed, if not unheard of, where most computer companies are concerned.

Computer Concepts may not be able to keep up this level of responsiveness when a complete version is sold, but I find it very confidence-building. A

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